ORDER NO. EMID891244

Service Manual

Electronic Organ

SX-EX15/L

(M), (MC), (EN), (EI), (EH), (EB), (EF), (EZ),
(EW), (EP), (EK), (XL), (XR), (XS), (XD), (X), (N)

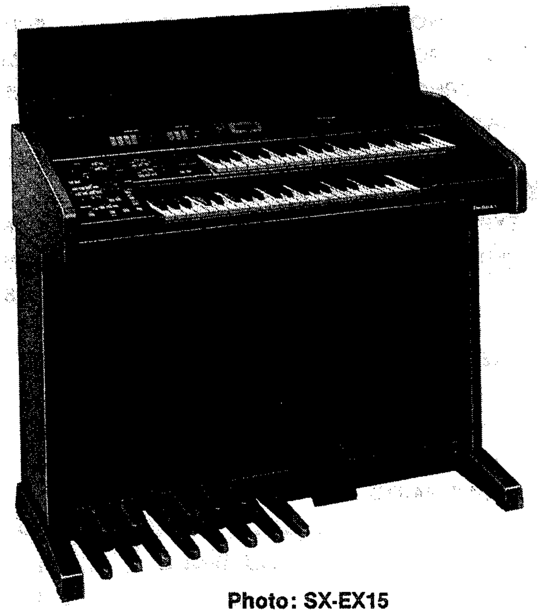

Photo: SX-EX15

AREAS

(M)	U.S'A.	(EK):	the United Kingdom
(MC)	Canada	(XL):	New Zealand
(EN):	Norway, Sweden, Denmark, Finland	(XR):	Australia
(EI):	Italy	(XS):	Malaysia, Singapore, South Africa
(EH):	Holland	(XD):	Saudi Arabia
(EB):	Belgium	(X):	the Middle East, Indonessia, Hong Kong, the Philippines, Taiwan, Thailand
(EF):	France, Austria	(N):	Japan
(EZ):	Germany		
(EW):	Switzerland		
(EP):	Spain		

Specifications

KEYBOARD		UPPER MANUAL: 44 KEYS LOWER MANUAL: 44 KEYS PEDAL KEYBOARD: 13 KEYS
UPPER VOICES	POLY	PIANO, E PIANO, HARPSICHORD, HAWAIIAN GUITAR, STRINGS, TENOR SAX, BRASS, ACCORDION, TAB VOICES: FLUTE 16′, 8′, 4′, 2′, PERC 2-2/3′, UPPER POLY VOLUME
	SOLO	FLUTE, PAN FLUTE, SYNTH LEAD, CLARINET, ALTO SAX, TROMBONE, TRUMPET, VIOLIN, UPPER SOLO VOLUME
LOWER VOICES	POLY	PIANO, E PIANO, HARPSICHORD, GUITAR, JAZZ GUITAR, STRINGS, TENOR SAX, BRASS, TAB VOICES: FLUTE 8′, 4′, 2′, LOWER POLY VOLUME
BASS VOICES		BASS 16′, ACOUSTIC, ELECTRIC, BASS VOLUME
ORCHESTRAL CONDUCTOR		UPPER (SOLO, POLY)
EFFECT	SUSTAIN	UPPER, BASS
	TREMOLO	UPPER TAB VOICES, LOWER TAB VOICES, TAB TREMOLO: SLOW/FAST
	CELESTE	UPPER POLY, LOWER POLY, UPPER TAB VOICES, LOWER TAB VOICES
GLIDE		FOOT SWITCH
TECHNI-CHORD		ON
RHYTHM	SELECTOR	MARCH, BALLAD. 8 BEAT, CHA-CHA, RHUMBA, JAZZ WALTZ, WALTZ, TANGO, SHUFFLE, SWING, SALSA, 16 BEAT, DISCO 1, 2, BOSSA NOBA, SAMBA
	CONTROLS	SYNCHRO & BREAK, START/STOP, TEMPO, DRUMS VOLUME
FILL IN & INTRO		ON
ENDING		ON
PLAY MODE		PCC, FINGERED, MEMORY

BASS & ACCOMP		1/2, MELODIC, ACCOMP VOLUME
ONE TOUCH PLAY		○
TRANSPOSE		CONTROL (G-C-F#)
PROGRAM CHORD COMPUTER		PCC, RECORD*, (LOWER KEYBOARD: |𝄞—, ◄, ►, ⊢⌒⊣, ⊢⌒⊢—, ⊢⊢⊢⊢, 𝄋, 𝄌, D.S., —‖, ⊂⊃, ⊣ ⊢)
TUNING		○
PROGRAMMABLE FUNCTION SWITCH		FOOT SWITCH, RECORD*
MUSICAL DISPLAY		TEMPO, BEAT, CHORD, PROGRAM CHORD COMPUTER, MIDI
MODE SET		MODE SET, RECORD*, MIDI: P CHANGE, EFFECT, SUSTAIN, MIDI CLOCK, START/STOP, OCTAVE +/−
JACKS	MIDI	IN, OUT, THRU
	OTHERS	LINE OUT, AUX IN, PEDAL IN, HEADPHONES JACK
OTHERS		POWER SWITCH, MAIN VOLUME, EXPRESSION PEDAL, AC CORD INPUT, INITIAL KEY (LOWER KEYBOARD)
OUTPUT		40W
SPEAKERS		20cm × 1, 6.5cm × 2
POWER REQUIREMENT		100W: NORTH AMERICA, SCANDINAVIA 110W: OTHERS AC 220V 50/60Hz (WEST GERMANY, SCANDINAVIA) AC 120V 60Hz (NORTH AMERICA) AC 120/220/240V 50Hz/60Hz
CABINET (W × H × D)		EX15L: 110.2cm × 90.4cm × 43.3cm (43-3/8″ × 35-19/32″ × 17-1/16″) EX15: 110.2cm × 90.6cm × 43.5cm (43-3/8″ × 35-21/32″ × 17-1/8″)
NET WEIGHT (WITHOUT BENCH)		EX15L 46Kg (101.4 lbs) EX15 49Kg (108 lbs)

∗Common RECORD button is used for these buttons.
• Specifications are subject to change without notice for further improvement.

Technics

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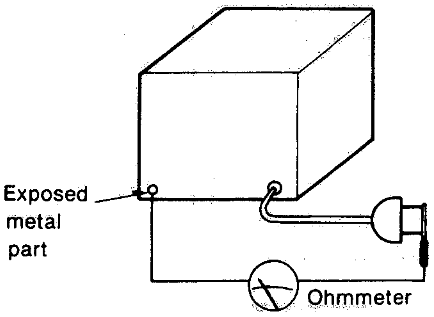
SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

• Safety Precaution

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

• Insulation Resistance Test

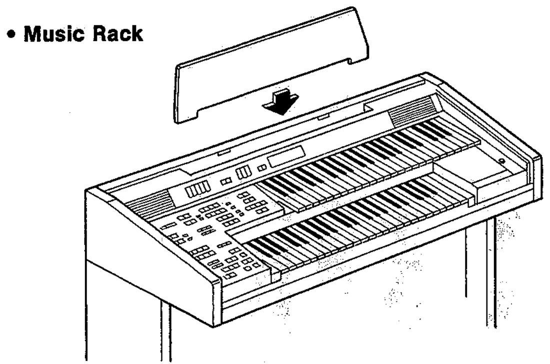
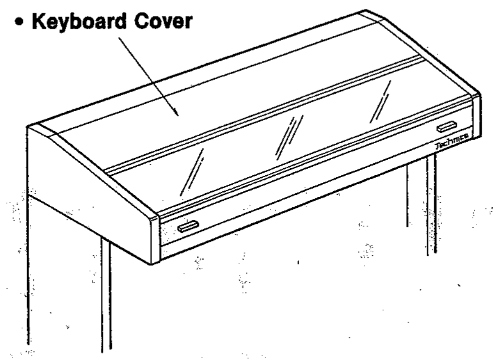
1. Unpulg the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw heads, connectors, control shafts, handle brackets, etc..
   Mesurements should range from 4MΩ to infinity to all exposed parts.



Resistance=4MΩ to ∞

DIFFERENCE BETWEEN SX-EX15L AND SX-EX15

- SX-EX15L: The music rack is as shown below.
- SX-EX15: The keyboard cover is attached.

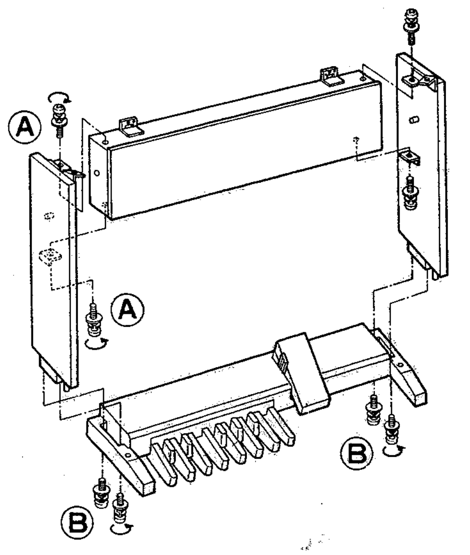
SX-EX15L	SX-EX15
 [Fig. A]	 [Fig. B]

HOW TO ASSEMBLE THE ORGAN

■ Screw kit

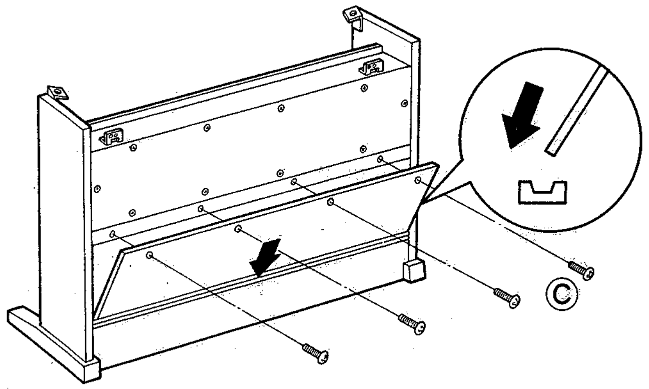
- Bolt Ⓐ ( ) ....8 pcs.
- Bolt Ⓑ ( ) ....4 pcs.
- Bolt Ⓒ ( ) ....4 pcs.
- Cord clamper..............................3 pcs.

1 Use for black bolts Ⓐ and secure each side plank to the speaker box, then use for metal bolts Ⓑ to mount it on to the pedal as shown in the figure.



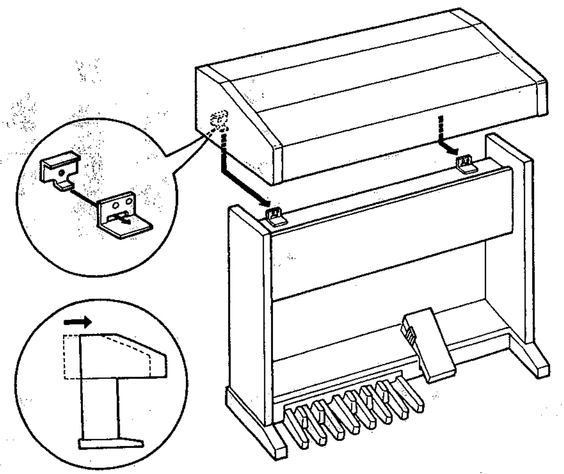
[Fig. 1]

2 Attach the rear board as shown.



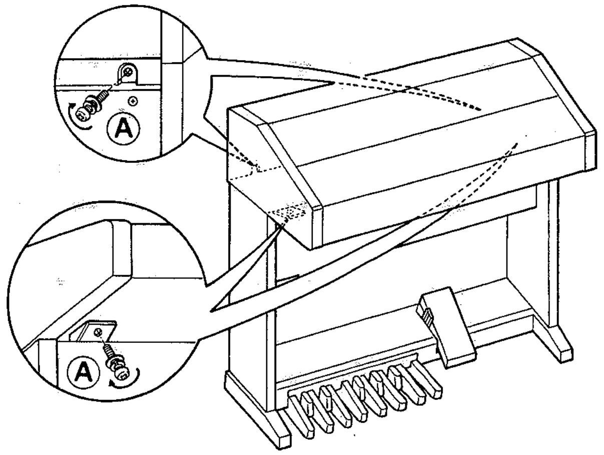
[Fig. 2]

3 Place the upper organ part on the lower stand part, making sure to fit the metal pieces together.



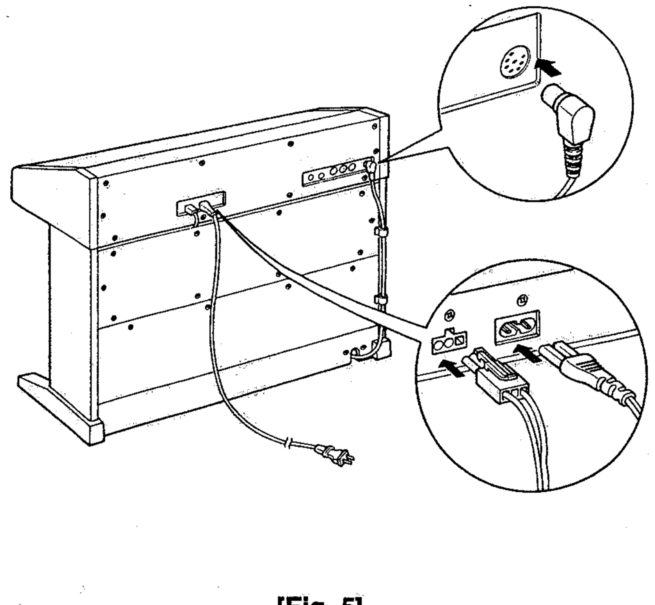
[Fig. 3]

4 Using four bolts Ⓐ, secure the upper organ part to the lower stand part as shown in the figure.



[Fig. 4]

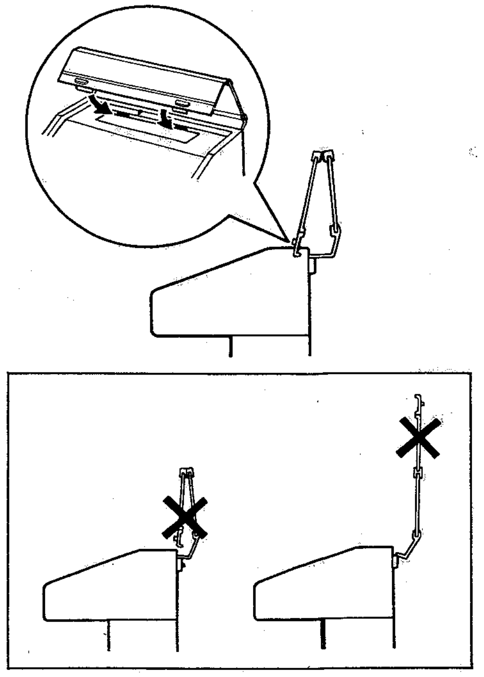
5 Connect the power cord, speaker cord and pedal cord as shown.



[Fig. 5]

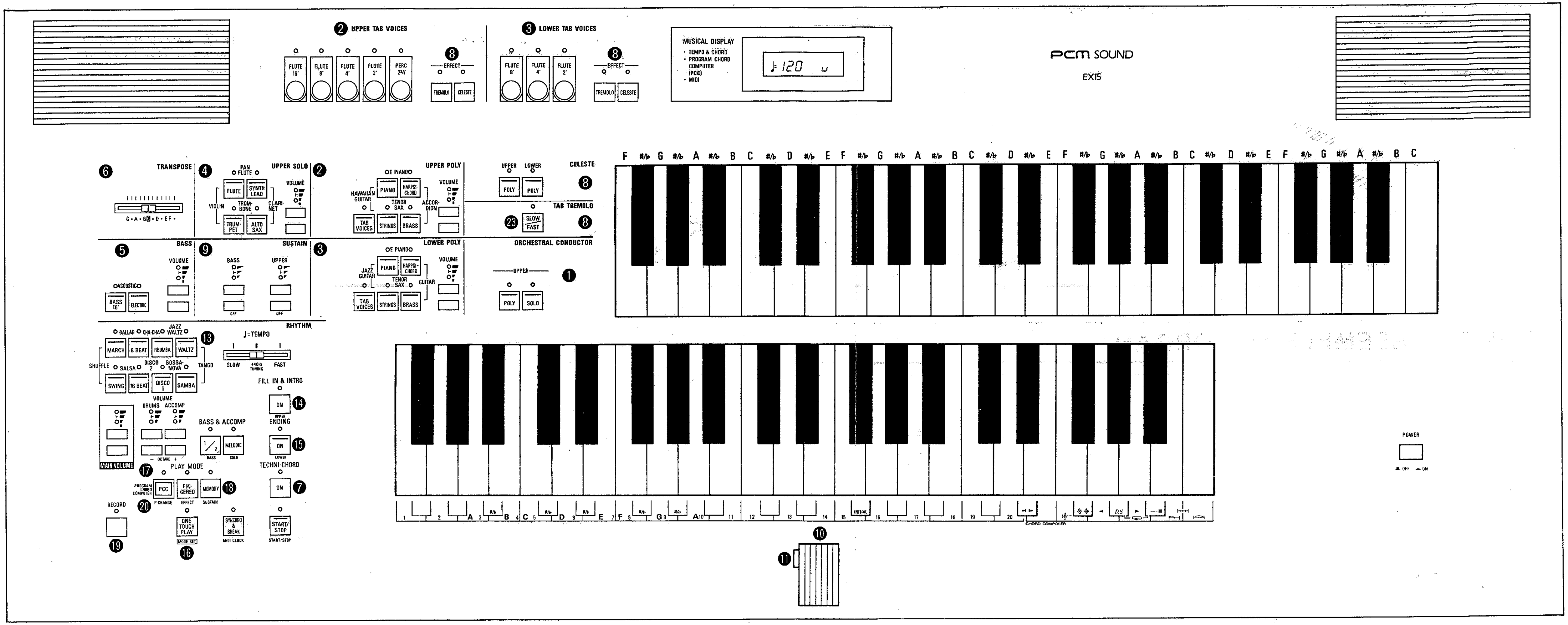
6 Open the keyboard cover, and set it as shown so it can be used as a music rack.

- EX-15L is not require this procedure.



[Fig. 6]

ARRANGEMENT OF CONTROL PANEL



❷ UPPER TAB VOICES
FLUTE 16'
FLUTE 8'
FLUTE 4'
FLUTE 2'
PERC 2⅔'
❽ EFFECT
TREMOLO
CELESTE
❸ LOWER TAB VOICES
FLUTE 8'
FLUTE 4'
FLUTE 2'
MUSICAL DISPLAY
• TEMPO & CHORD
• PROGRAM CHORD COMPUTER (PCC)
• MIDI
PCM SOUND
EX15
❻ TRANSPOSE
G • A • B♭ • C • D • E♭ • F •
❹ PAN FLUTE
UPPER SOLO ❷
FLUTE
SYNTH LEAD
VIOLIN
TROMBONE
CLARINET
TRUMPET
ALTO SAX
VOLUME
UPPER POLY
PIANO
HAWAIIAN GUITAR
HARPSICHORD
TENOR SAX
ACCORDION
TAB VOICES
STRINGS
BRASS
CELESTE
UPPER
LOWER
POLY
❽
TAB TREMOLO
㉓ SLOW FAST
BASS ❺
VOLUME
ACOUSTIC
BASS 16'
ELECTRIC
❾ SUSTAIN
BASS
UPPER
OFF
❸ LOWER POLY
PIANO
JAZZ GUITAR
HARPSICHORD
TENOR SAX
GUITAR
TAB VOICES
STRINGS
BRASS
ORCHESTRAL CONDUCTOR
UPPER
POLY
SOLO
❶
RHYTHM
⓭
BALLAD
CHA-CHA
JAZZ WALTZ
MARCH
8 BEAT
RHUMBA
WALTZ
SHUFFLE
SALSA
DISCO 2
BOSSA-NOVA
TANGO
SWING
16 BEAT
DISCO 1
SAMBA
♩=TEMPO
SLOW
440Hz TUNING
FAST
FILL IN & INTRO
ON ⓮
VOLUME
DRUMS
ACCOMP
MAIN VOLUME
BASS & ACCOMP
½
MELODIC
BASS
SOLO
— OCTAVE +
UPPER ENDING
ON ⓯
LOWER TECHNI-CHORD
ON ❼
⓱ PLAY MODE
PROGRAM CHORD COMPUTER
PCC
FINGERED
MEMORY
⓲
P.CHANGE
EFFECT
SUSTAIN
RECORD
⑳
⓳
ONE TOUCH PLAY
MODE SET
⓰
SYNCHRO & BREAK
MIDI CLOCK
START/STOP
POWER
OFF
ON
F G A B C D E
CHORD COMPOSER
INITIAL
❿
⓫

BASIC FUNCTIONS

❶ ORCHESTRAL CONDUCTOR
These buttons allow you to select groups of voices and their effects instantly. The voice groups are selected independently for the upper keyboards.

❷ UPPER POLY
Turning on the **UPPER POLY** button of the **ORCHESTRAL CONDUCTOR** will select these sounds for the upper keyboard. They include percussive instruments such as the **PIANO** and orchestral instruments such as the **ACCORDION**. By turning on the **TAB VOICES** button, you can select flute and percussive sounds, plus tremolo and celeste effects.

❸ LOWER POLY
These voices are heard on the lower keyboard. You can select and combine flute voices when the **TAB VOICES** button is on. The lower keyboard voices are used mostly for accompaniment.

❹ SOLO
Select these monophonic sounds for the upper keyboard by turning on the **SOLO** button in the **ORCHESTRAL CONDUCTOR.** Select only **SOLO** or combine with **POLY** voices using the **ORCHESTRAL CONDUCTOR.**

❺ BASS
These are the voices for the pedal keyboard. As with other sound groups, the volume of the pedal voices is adjusted with the separate **VOLUME** buttons.

❻ TRANSPOSE
C is the standard setting, but you can raise or lower the key of the entire organ with the slide control. The transposed key is shown on the **MUSICAL DISPLAY.**

❼ TECHNI-CHORD
Chord notes played on the lower keyboard are added to melody notes played on the upper keyboard.

❽ Effect (CELESTE/TAB TREMOLO)
CELESTE is a multi-dimensional effect which can be applied to most voices. **TREMOLO** is a rapid change in volume which works for the flute and the organ sounds. Select from two tremolo speeds.

❾ SUSTAIN
Sustain can be applied to most voices of the upper and/or pedal keyboard to allow the sound to fade away gradually after the keys are released.

❿ Expression pedal
Increase and decrease the loudness of all the organ voices as you play to add expression to the music.

⓫ Glide control
Lower the pitch or the organ by one half-tone by pressing foot switch. This is used, for example, for the Hawaiian guitar effect and can be applied to many of the upper and lower keyboard voices.

⓭ RHYTHM
A wide variety or preset rhythms are available for automatic accompaniment. Turn the rhythm on/off with the **START/STOP** button or **SYNCHRO & BREAK** button. Adjust the volume with the **DRUMS** buttons and set the tempo with the easy sliding control.

⓮ FILL IN & INTRO
Add a drum introduction or a fill-in (break) at the touch of a button during your performance.

⓯ ENDING
When this button is pressed, an ending rhythm pattern will be played and then the rhythm will stop.

⑯ ONE TOUCH PLAY
With this special feature, you select a rhythm and appropriate voice and effects are automatically set.

⑰ PLAY MODE
Select the type of accompaniment—either normal or automatic—or choose the accompaniment you programmed beforehand in the **PROGRAM CHORD COMPUTER**.

⑱ Auto Play Chord
This feature is selected when the **FINGERED** button in the **PLAY MODE** is turned on. When a single key on the lower keyboard is pressed, a full chord and a bass note sound. Play major, minor, seventh or minor seventh chords and the bass note just by pressing one key.

⑲ RECORD
This button is used to store the contents of the organ's various memories, including the **PROGRAM CHORD COMPUTER**. It is also used when setting the functions of the programmable switches.

⑳ PROGRAM CHORD COMPUTER
Use this feature to store the chord accompaniment of an entire song in the organ, then have it played back automatically while you play the melody. With the keys at the right end of your lower keyboard, store whole, half-or quarter-measure chords, specify repeat play, and more.

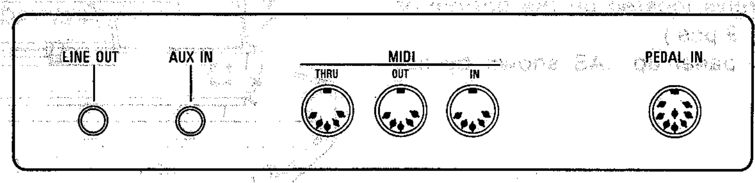
㉑ Programmable function switch
The foot switch can be programmed to conveniently turn on and off other functions, for example the rhythm start/stop or **TECHNI-CHORD**.

㉓ TREMOLO speed adjustment
The **SLOW/FAST** button is also used to adjust the tremolo slow and fast speeds as desired.

㉔ Tuning
The sliding **TEMPO** control can also be used to adjust the pitch of the entire organ for ensemble play with other instruments.

CONNECTION TERMINALS

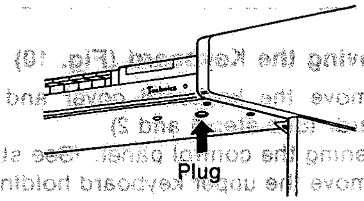
(On the rear of the organ)



■ LINE OUT (output level 300 mV, 600Ω)
Use these outputs to connect the audio output of the organ to other audio equipment, such as a tape deck, VCR, audio mixer, tone cabinets, or additional amplifier/speaker systems.

■ PHONES
(Use headphones with 16 ohm impedance.)
For silent practice headphones may be used. When plugged in, the organ's speaker system is automatically switched off, and the entire organ is heard only through the headphones.

■ AUX IN (input level 500 mV, 20 kΩ)
Use these inputs to connect the audio outputs of other audio equipment, such as a tape deck, VCR, tuner, or an audio mixer, for playback through the organ.



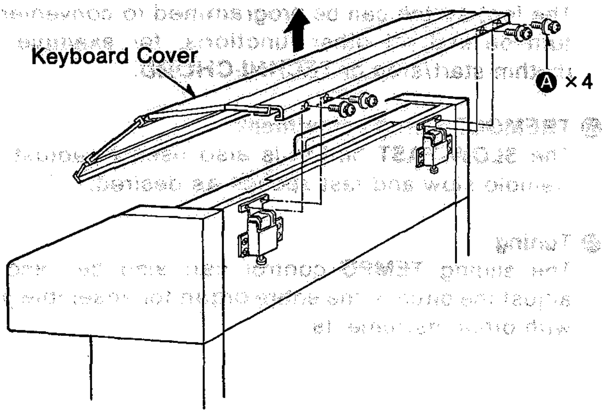
DISASSEMBLY INSTRUCTIONS

1 Removing the Keyboard Cover (Fig. 7)

CAUTION: SX-EX15L is not require this procedure.

① Remove the keyboard cover holding screws. (Ⓐ 4 pcs.)

② Lift the keyboard cover up. (As shown by the arrow.)

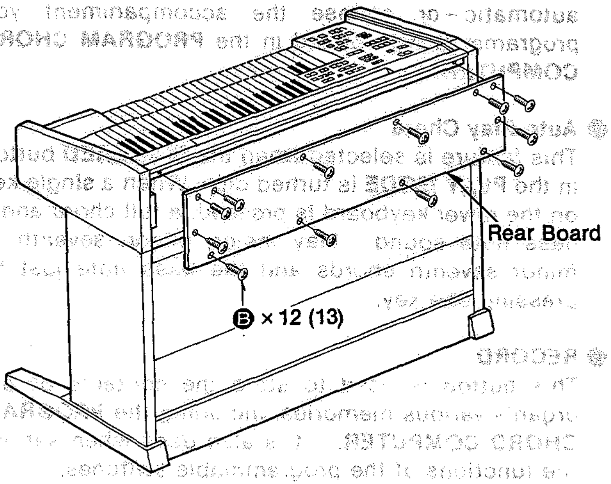


[Fig. 7]

2 Removing the upper rear board (Fig. 8)

① Remove the Keyboard Cover. (See Step 1)

② Remove the upper rear board holding screws. (Ⓑ 12 pcs.) *(SX-EX15L: Ⓑ 13 pcs.)



[Fig. 8]

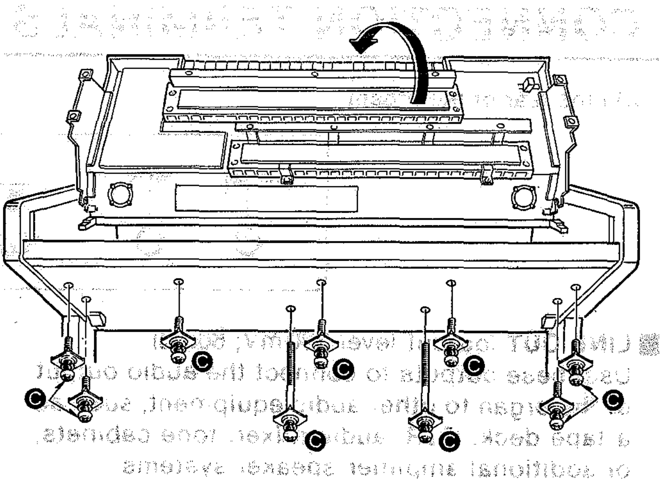
3 Opening the Control Panel (Fig. 9)

① Remove the keyboard cover. (See step 1.)

② Remove the upper rear board. (See step 2.)

③ Remove the screws located on the bottom of the cabinet. (Ⓒ 9 pcs.)

④ Lift the control panel up. (AS shown by the arrow.)



[Fig. 9]

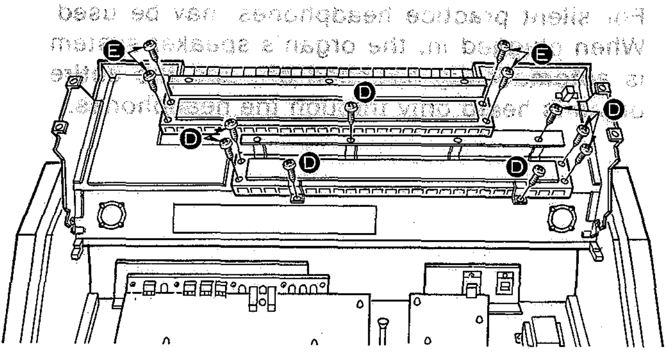
4 Removing the Keyboard (Fig. 10)

① Remove the keyboard cover and upper rear board. (See step 1 and 2)

② Opening the control panel. (See step 3)

③ Remove the upper keyboard holding screws. (Ⓓ 8 pcs.)

④ Remvoe the lower keyboard holding screws. (Ⓔ 4 pcs.)



[Fig. 10]

5 Removing the Printed Circuit Board (Fig. 11)

① Remove the keyboard cover and upper rear board. (See step 1 and 2)

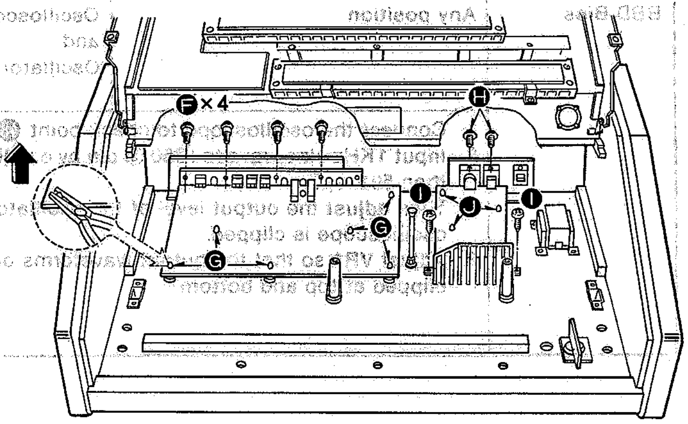
② Opening the control panel. (See step 3)

③ **MAIN** P.C.B.

- Remove the screws located on the rear accessory panel. (Ⓕ 4 pcs.)
- Remove the claws which inserted to the MAIN P.C.B. (Ⓖ 6 pcs.)

④ **AS** P.C.B. Ass'y

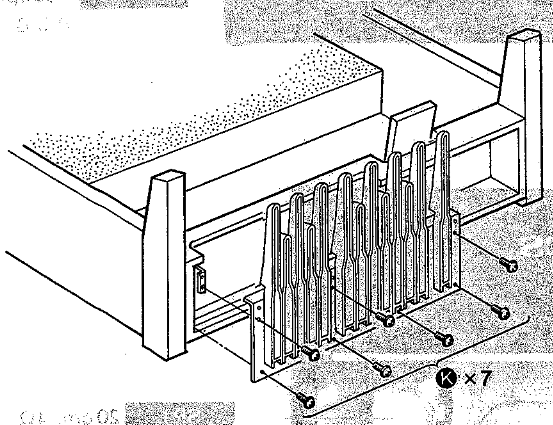
- Remove the screws located on the rear accessory panel. (Ⓗ 4 pcs. & Ⓘ 2 pcs.)
- Remove the claws which inserted to the **AS** P.C.B. Ass'y. (Ⓙ 3 pcs.)



[Fig. 11]

6 Removing the Pedal Keyboard (Fig. 12)

① Remove the pedal keyboard holding screws. (Ⓚ 7 pcs.)

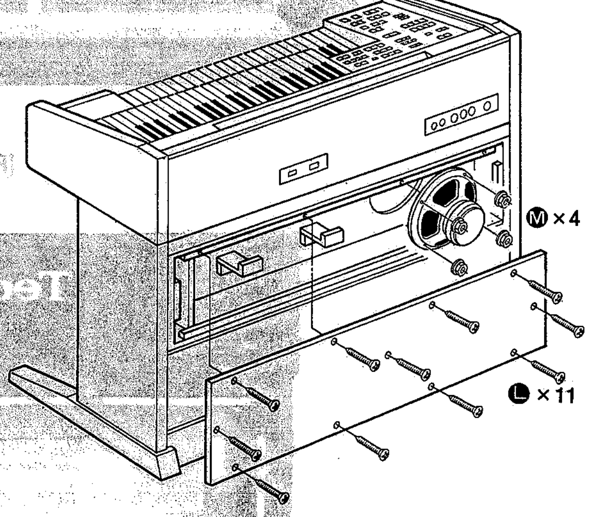


[Fig. 12]

7 Removing the Speaker (Fig. 13)

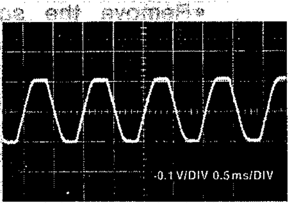
① Remove the rear board holding screws. (Ⓛ 11 pcs.)

② Remove the speaker mounting nuts. (Ⓜ 4 pcs.)

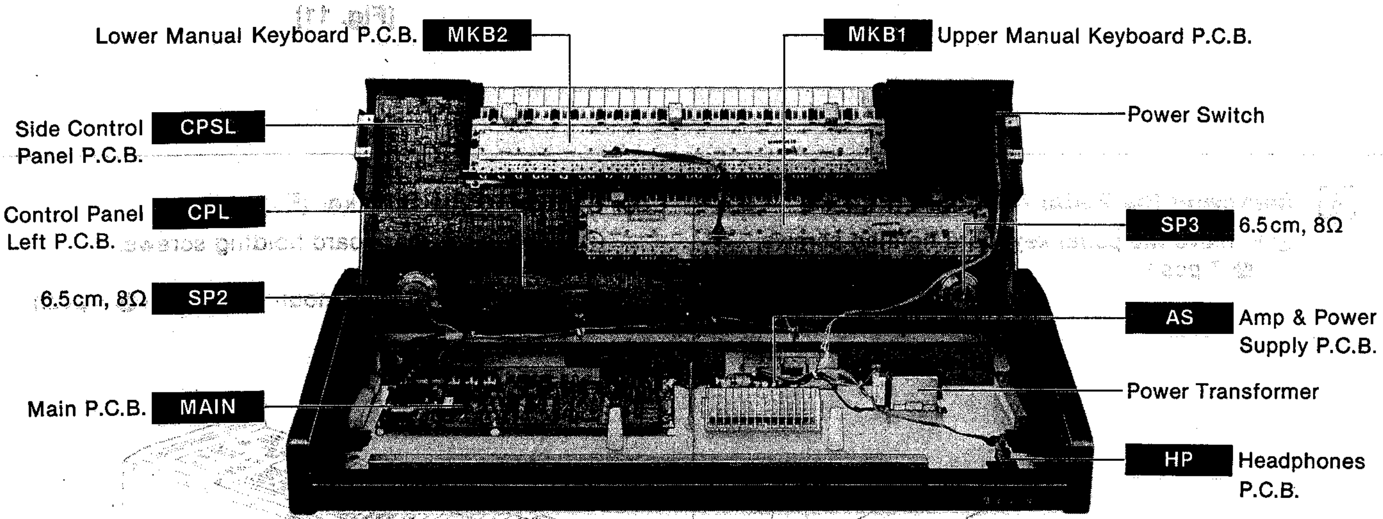


[Fig. 13]

ADJUSTMENT PROCEDURE

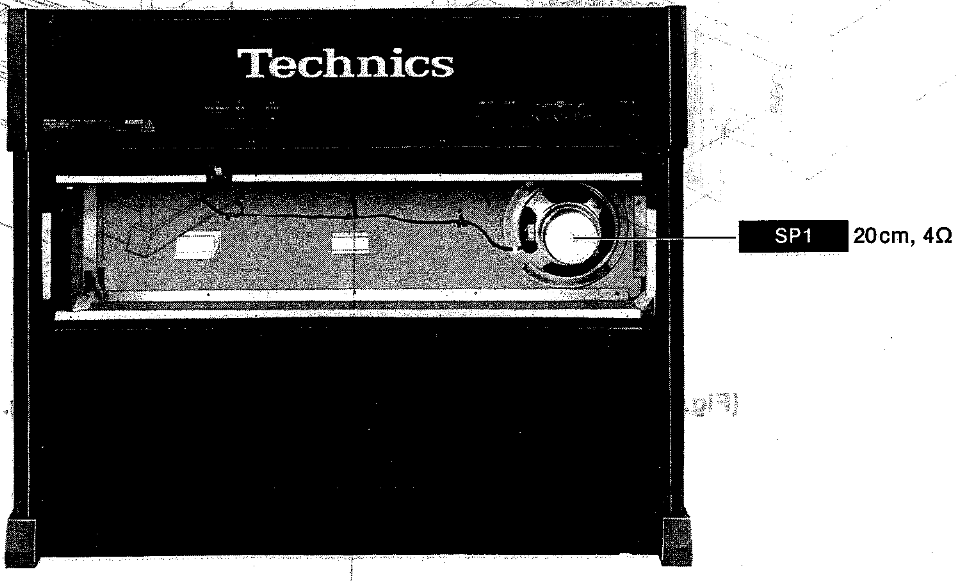
ADJUSTMENT	MEASURING CONDITIONS	EQUIPMENT	ADJUSTMENT P.C.B.	ADJ. POINT	CONNECT METER TO	METER READING
BBD Bias	Any position	Oscilloscope and Oscillator	MAIN P.C.B.	VR1	Check point ㊽	Shown below
	1. Connect the oscilloscope to check point ㊽ of MAIN P.C.B. 2. Input 1KHz sine-wave to IC50 ③ pin by oscillator through capacitor of less than 50V 1μF. Then adjust the output level of the oscillator until the sine wave on the oscilloscope is clipped. 3. Adjust VR1 so that the output waveforms on the oscilloscope are evenly clipped at top and bottom.					

PARTS LOCATION



Lower Manual Keyboard P.C.B.
MKB2
MKB1
Upper Manual Keyboard P.C.B.
Side Control Panel P.C.B.
CPSL
Power Switch
Control Panel Left P.C.B.
CPL
SP3
6.5cm, 8Ω
6.5cm, 8Ω
SP2
AS
Amp & Power Supply P.C.B.
Main P.C.B.
MAIN
Power Transformer
HP
Headphones P.C.B.

[Photo-1]



Technics
SP1
20cm, 4Ω

[Photo-2]

PRECAUTIONS BEFORE SERVICING

Precautions for measuring of the output waveforms.

1. Please set the initial mode (factory-preset mode) before measurement.
2. After initial mode, set the measurement conditions as each check points.
3. The waveform was measured by "National Digital Storage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may somewhat change due to variation of timing of triggering.
4. Since the 1/10 of the test probe is used, the indicated voltage value on bottom part of the each waveform photo is 1/10 of the actual value. (e.g. 0.2V/cm should be 2.0V/cm)

Important safety notice:

Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Symbolic Marks

The symbolic marks for resistors and capacitors which are used in this circuits are classified as following TABLE-1 and TABLE-2.

1. RESISTORS
   - Resistors without symbolic mark are FIXED CARBON FILM RESISTORS (ERD-type).
   - All resistors are 1/4WATT, ±5% TOLERANCE unless otherwise designated in the schematic diagrams.

(TABLE-1)

SYMBOL	SPECIFICATION	SYMBOL	SPECIFICATION
Ⓕ	Fixed Carbon Film Resistors "FLAME-PROOF" (ERD—F—type)	Ⓕ	Fixed Metal Film Resistors "FLAME-PROOF" (ERX—type)
Ⓕ	Fixed Wire Wound Resistors "FLAME-PROOF" (ERF—type)	🄵	Fuse Type Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERQ—type)
Ⓕ	Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERG—type)	🄵	Fuse Type Fixed Carbon Film Resistors "FLAME-PROOF" (ERD2FC—type)
	Fixed Metal Film Resistors (Precision and High Stability) (ERO—type)		

2. CAPACITORS
   - Capacitors without symbolic mark are POLYESTER CAPACITORS. (ECQM-type, ECQG-type, ±10% Tolerance)
   - Polarized capacitors without symbolic mark are Aluminum Electrolytic Capacitors. (ECEA—type, ±20% Tolernace)

(TABLE-2)

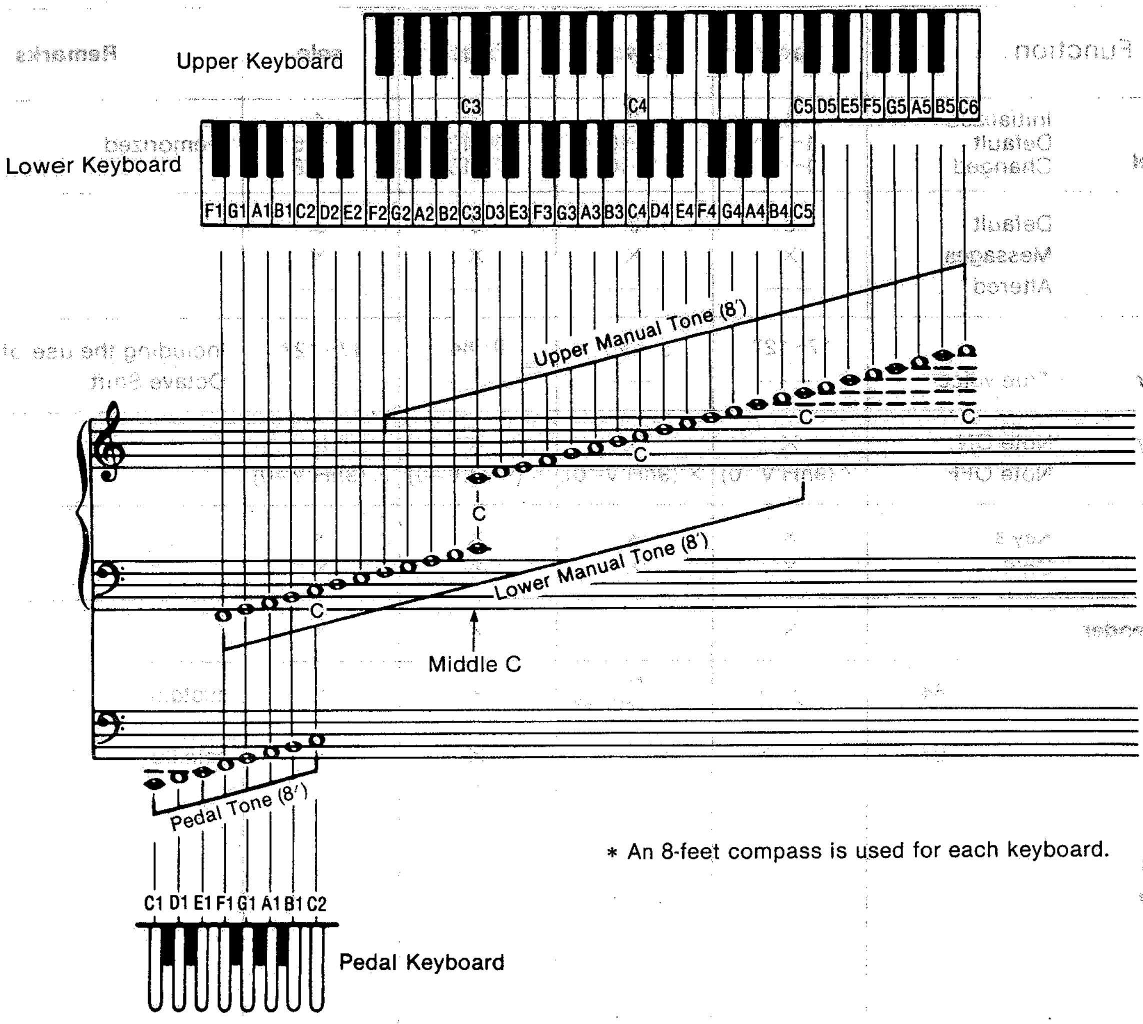
SYMBOL	SPECIFICATION	TYPE
Ⓝ	Non-Polarised Electrolytic Capacitors	ECEA—N—type
Ⓨ	Non-Polarised Electrolytic (for Network System)	ECEA—Y—type
Ⓚ	Aluminum Electrolytic Capacitors (Miniature type)	ECEA—K—type ECEA—X—type
(MS)	Aluminum Electrolytic Capacitors (Low leakage current type)	ECEA—M—type
Ⓩ	Aluminum Electrolytic Capacitors (Low impeadance type)	ECEA—Z—type
(TF)	Metalized Plastic Film Capacitors (TF Series)	ECQV—type
	Polyester Film Capacitors	ECQB—type
○	Temperature Compensating Ceramic Capacitors	ECC—type
	High-Dielectric Constant Ceramic Capacitors	ECK—type
	High-Dielectric Constant Ceramic Capasitors	ECRR—type
	Ceramic Capacitors (Cylinder type)	ECBA—type
	Metalized Polyester Film Capacitors for Across the Line	ECQ—EW—type
	Aluminum Electrolytic Capacitors for smooting Circuit	ECES—type

SYMPTOMS WHICH APPEAR TO BE SIGNS OF TROUBLE

The following changes in performance may occur in the Technics organ but do not indicate trouble:

Phenomenon	Remedy
The buttons, keyboards, etc. malfunction.	■ Press the **RECORD** button and then the **MODE SET** button. Then press the **INITIAL** key on the lower keyboard.
Different voices are heard in the lower and upper half keys on the upper keyboard.	The lower portion of the upper keyboard is used to monitor the lower keyboard voices when the lower keyboard is required for programming functions.
A rhythm does not start or no rhythm sounds.	•No rhythm sounds if the **DRUMS VOLUME** buttons are turned off.
The **TREMOLO** speed is improper.	The **TREMOLO** speed is adjustable. Adjust to your favorite speed.
The contents of the **PROGRAM CHORD COMPUTER**, etc. cannot be stored.	After pressing the **RECORD** button, press the necessary buttons within 5 seconds. The **RECORD** button turns off after a lapse of 5 seconds, making storage operation impossible. Press the **RECORD** button again.
Storage is not possible with the **PROGRAM CHORD COMPUTER**.	•Check that the **PCC** indicator is slowly flashing. Pressing the **FINGERED** button turns off the **RECORD** button, making storage operation impossible. •Do not release the left hand (chord designation) before pressing the measure keys (⊢⊣, ⊢⊣⊣, and ⊢⊣⊣⊣).
The cabinet becomes heated to some degree.	The Technics organ has a built-in power source that heats the cabinet to some degree. This is not an indication of trouble.
The glide control does not operate properly.	•Any functional on and off operation other than the glide is storable in the foot switch. •The glide effect does not function for the following voices: **PIANO, HARPSICHORD, E PIANO, STRINGS, LOWER TAB VOICES, ALL BASS** voices.
SUSTAIN does not operate properly.	**SUSTAIN** does not function for the following voices: **ACCORDION, BRASS, TENOR SAX.**

KEYBOARD RANGES


Upper Keyboard
C3
C4
C5 D5 E5 F5 G5 A5 B5 C6
Lower Keyboard
F1 G1 A1 B1 C2 D2 E2 F2 G2 A2 B2 C3 D3 E3 F3 G3 A3 B3 C4 D4 E4 F4 G4 A4 B4 C5
Upper Manual Tone (8′)
C
C
C
C
Lower Manual Tone (8′)
C
Middle C
Pedal Tone (8′)
C1 D1 E1 F1 G1 A1 B1 C2
Pedal Keyboard

∗ An 8-feet compass is used for each keyboard.

MIDI INPLEMENTATION CHART

Technics Organ
[SX-EX15L/SX-EX25L/SX-EX35]

(Transmitted)

Function...		upper	lower	bass	solo	Remarks
Basic Channel	Initialized Default Changed	1 1~16 1~16	2 1~16 1~16	3 1~16 1~16	4 1~16 1~16	memorized
Mode	Default Messages Altered	3 × ———	3 × ———	3 × ———	3 × ———	
Note Number	 True voice	17~127 ———	5~120 ———	0~84 ———	17~127 ———	Including the use of Octave Shift
Velocity	Note ON Note OFF	× × (9nH:V=0)	× × (9nH:V=0)	× × (9nH:V=0)	× × (9nH:V=0)	
After Touch	Key's Ch's	× ×	× ×	× ×	× ×	
Pitch Bender		×	×	×	×	
Control Change	64	*○ ×	× (EX15) *○ × (EX25/EX35)	×	×	sustain
	94	*○ ×	*○ ×	×	×	celeste
Prog Change	 True #	*○ × 0~ 8 (EX15) 0~15 (EX25/EX35)	*○ × 0~ 8 (EX15) 0~11 (EX25/EX35)	*○ × 0~2 (EX15) 0~7 (EX25/EX35)	*○ × 0~7 ———	
System Exclusive		×				
System Common	Song Pos Song Sel Tune	× ○ (EX15) *○ × (EX25/EX35) ×				
System Real Time	Clock Commands	○ *○ ×				
Aux Messages	Local ON/OFF All Notes OFF	× ○	× ○	× ○	× ○	
	Active Sense Reset	○ ×				
Notes		*○ ×.......... Whether or not the data for each of these items is transmitted can be set.				

Mode 1: OMNI ON, POLY **Mode 2:** OMNI ON, MONO ○ : Yes
Mode 3: OMNI OFF, POLY **Mode 4:** OMNI OFF, MONO × : No

Technics Organ
[SX-EX15L/SX-EX25L/SX-EX35]

(Recognized)

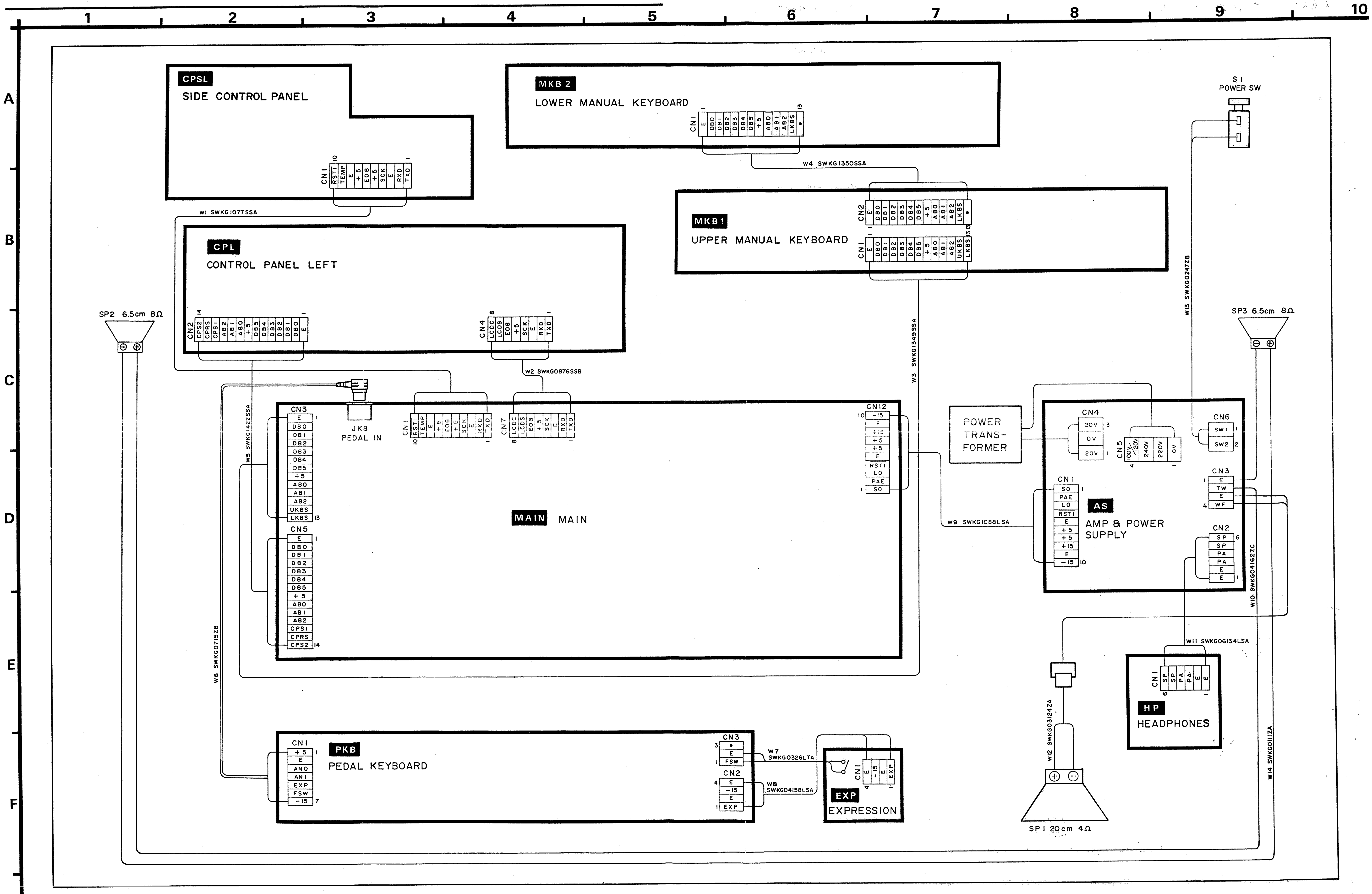
Function...		upper	lower	bass	solo	Remarks
Basic Channel	Initialized	1	2	3	4	memorized
	Default	1~16	1~16	1~16	1~16	
	Changed	1~16	1~16	1~16	1~16	
Mode	Default	3	3	3	3	OMNI OFF POLY Mode
	Messages	×	×	×	×	
	Altered	——	——	——	——	
Note Number		0 ~127	0~127	0~127	0~127	Changes depending on the position of the Transpose slide control or Octave Shift.
	True voice	**36~107 (EX15) 36~119	**36~107 (EX15) 36~119	**36~107	48~107	
Velocity	Note ON	×	×	×	×	
	Note OFF	× (9nH:V=0)	× (9nH:V=0)	× (9nH:V=0)	× (9nH:V=0)	
After Touch	Key's	×	×	×	×	
	Ch's	×	×	×	×	
Pitch Bender		×	×	×	×	
Control Change	64	*○ ×	× (EX15) *○ × (EX25/EX35)	×	×	sustain
	94	*○ ×	*○ ×	×	×	celeste
Prog Change	True #	*○ × 0~8 (EX15) 0~3 (EX25) 0~6 (EX35)	*○ × (EX15) × (EX25/EX35) 0~8 (EX15)	*○ × 0~2 (EX15) 0~7 (EX25/EX35)	*○ × 0~7	
System Exclusive		×				
System Common	Song Pos	×				
	Song Sel	× (EX15) ○* × (EX25/EX35)				
	Tune	×				
System Real Time	Clock	○				
	Commands	*○ ×				
Aux Messages	Local ON/OFF	×	×	×	×	
	All Notes OFF	○	○	○	○	(123~127)
	Active Sense	○				
	Reset	×				
Notes		*○ ×.......... Whether or not the data for each of these items is received can be set. **Changes depending on the selected voice.				

Mode 1: OMNI ON, POLY **Mode 2:** OMNI ON, MONO ○ : Yes
Mode 3: OMNI OFF, POLY **Mode 4:** OMNI OFF, MONO × : No

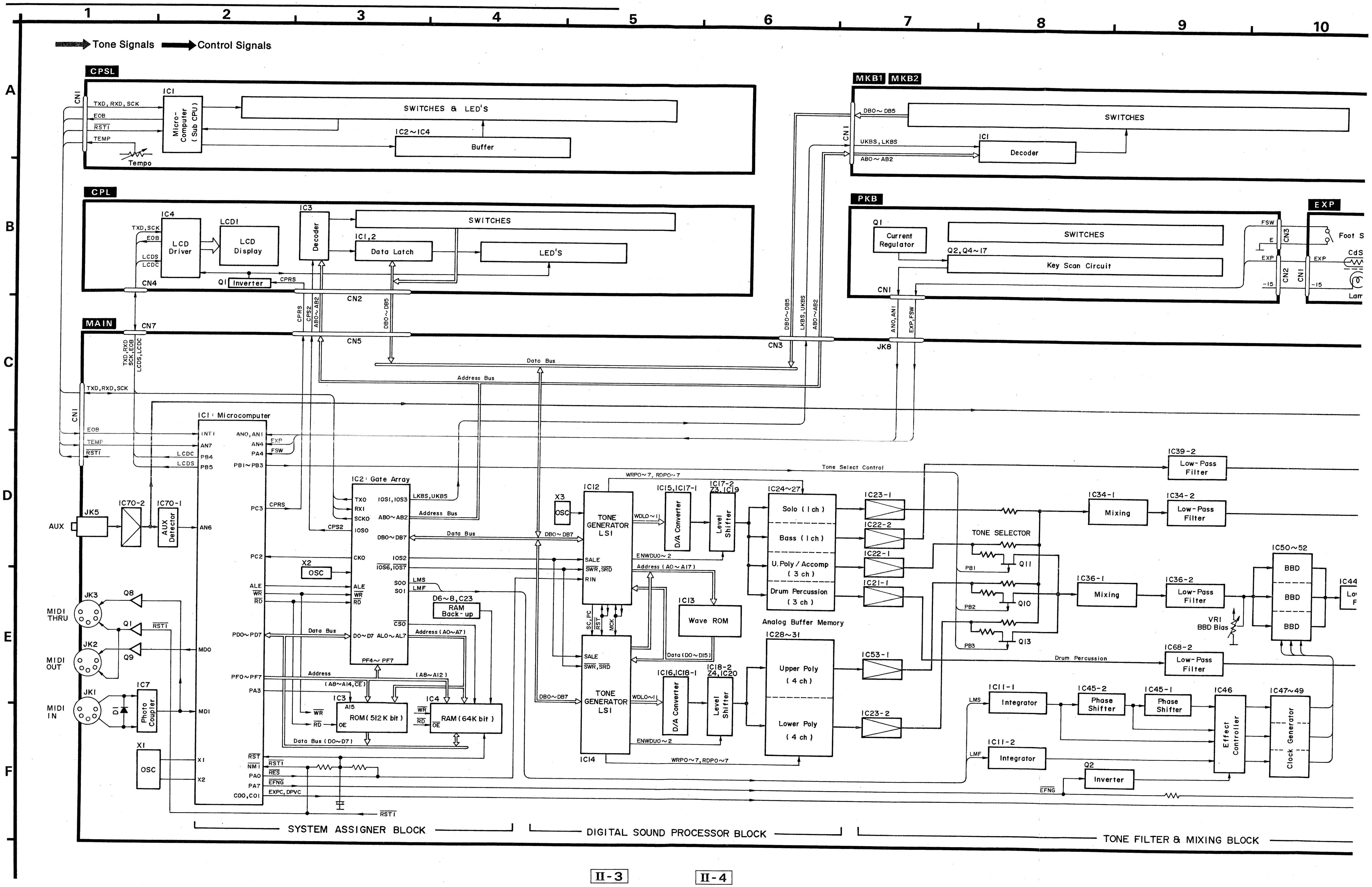
- This product adheres to MIDI specifications as published by the Japan MIDI Association.

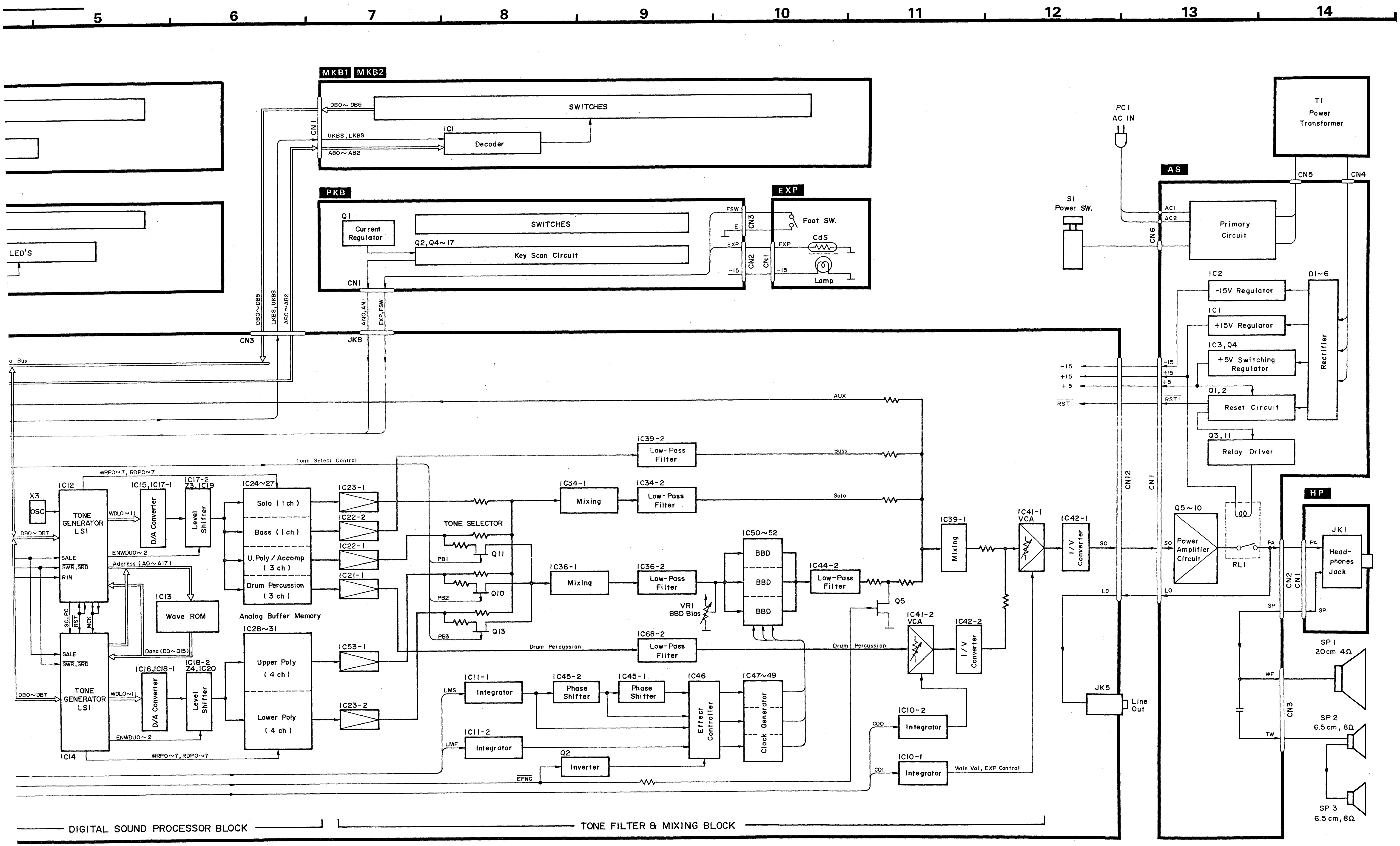
MEMO

WIRING CONNECTION DIAGRAM

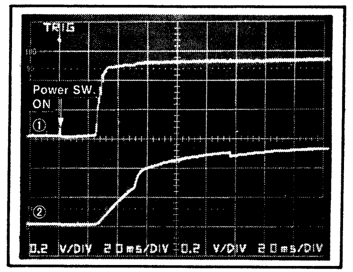

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
CPSL
SIDE CONTROL PANEL
CN1
RST1 TEMP E +5 EOB +5 SCK E RXD TXD
10
1
W1 SWKG1077SSA
MKB 2
LOWER MANUAL KEYBOARD
CN1
E DB0 DB1 DB2 DB3 DB4 DB5 +5 AB0 AB1 AB2 LKBS •
1
13
W4 SWKG1350SSA
MKB1
UPPER MANUAL KEYBOARD
CN2
E DB0 DB1 DB2 DB3 DB4 DB5 +5 AB0 AB1 AB2 LKBS •
CN1
E DB0 DB1 DB2 DB3 DB4 DB5 +5 AB0 AB1 AB2 UKBS LKBS
1
13
S1
POWER SW
W13 SWKG0247ZB
CPL
CONTROL PANEL LEFT
CN2
CPS2 CPRS CPS1 AB2 AB1 AB0 +5 DB5 DB4 DB3 DB2 DB1 DB0 E
14
1
CN4
LCDC LCDS EOB +5 SCK E RXD TXD
8
1
W2 SWKG0876SSB
SP2 6.5cm 8Ω
SP3 6.5cm 8Ω
W3 SWKG1349SSA
W5 SWKG1422SSA
JK8
PEDAL IN
MAIN
MAIN
CN3
E DB0 DB1 DB2 DB3 DB4 DB5 +5 AB0 AB1 AB2 UKBS LKBS
1
13
CN5
E DB0 DB1 DB2 DB3 DB4 DB5 +5 AB0 AB1 AB2 CPS1 CPRS CPS2
1
14
CN1
RST1 TEMP E +5 EOB +5 SCK E RXD TXD
10
1
CN7
LCDC LCDS EOB +5 SCK E RXD TXD
8
1
CN12
-15 E +15 +5 +5 E RST1 LO PAE SO
10
1
POWER TRANS-FORMER
AS
AMP & POWER SUPPLY
CN4
20V 0V 20V
3
1
CN5
100V/120V 240V 220V 0V
4
1
CN6
SW1 SW2
1
2
CN1
SO PAE LO RST1 E +5 +5 +15 E -15
1
10
CN3
E TW E WF
1
4
CN2
SP SP PA PA E E
6
1
W9 SWKG1088LSA
W10 SWKG04162ZC
W11 SWKG06134LSA
W6 SWKG0715ZB
HP
HEADPHONES
CN1
SP SP PA PA E E
6
1
W12 SWKG03124ZA
SP1 20cm 4Ω
W14 SWKG0111ZA
PKB
PEDAL KEYBOARD
CN1
+5 E AN0 AN1 EXP FSW -15
1
7
CN3
• E FSW
3
1
CN2
E -15 E EXP
4
1
W7
SWKG0326LTA
W8
SWKG04158LSA
EXP
EXPRESSION
CN1
E -15 E EXP
4
1

BLOCK DIAGRAM


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
Tone Signals
Control Signals
CPSL
CN1
TXD, RXD, SCK
EOB
RSTI
TEMP
Tempo
IC1
Micro-Computer (Sub CPU)
SWITCHES & LED'S
IC2~IC4
Buffer
CPL
IC4
LCD Driver
LCD1
LCD Display
IC3
Decoder
SWITCHES
IC1,2
Data Latch
LED'S
Q1
Inverter
CPRS
CN4
CN2
TXD,SCK
EOB
LCDS
LCDC
CPRS
CPS2
AB0~AB2
DB0~DB5
MAIN
CN7
CN5
TXD,RXD
SCK,EOB
LCDS,LCDC
Data Bus
Address Bus
MKB1
MKB2
DB0~DB5
SWITCHES
UKBS, LKBS
AB0~AB2
IC1
Decoder
PKB
Q1
Current Regulator
SWITCHES
Q2,Q4~17
Key Scan Circuit
CN1
EXP
FSW
E
CN3
EXP
CN2
CN1
-15
Foot S
CdS
Lam
CN3
DB0~DB5
LKBS,UKBS
AB0~AB2
AN0,AN1
EXP,FSW
JK8
CN1
TXD,RXD,SCK
EOB
TEMP
RSTI
LCDC
LCDS
IC1 : Microcomputer
INT1
AN7
PB4
PB5
AN0, AN1
AN4
PA4
PB1~PB3
EXP
FSW
PC3
CPRS
PC2
ALE
WR
RD
PD0~PD7
PF0~PF7
PA3
MD0
MDI
X1
X2
RST
NM1
PA0
PA7
C00,C01
RSTI
RES
EFNG
EXPC, DPVC
RSTI
AUX
JK5
IC70-2
IC70-1
AUX Detector
AN6
JK3
MIDI THRU
Q8
Q1
RSTI
JK2
MIDI OUT
Q9
JK1
MIDI IN
D1
IC7
Photo Coupler
X1
OSC
X2
OSC
IC2 : Gate Array
TX0
RXI
SCK0
IOS0
CK0
ALE
WR
RD
IOS1, IOS3
LKBS,UKBS
AB0~AB2
Address Bus
DB0~DB7
Data Bus
IOS2
IOS6, IOS7
LMS
LMF
S00
SOI
CPS2
CS0
D0~D7
AL0~AL7
Data Bus
Address (A0~A7)
PF4~PF7
D6~8, C23
RAM Back-up
Address
(A8~A14, CE)
(A8~A12)
IC3
A15
WR
RD
OE
ROM (512K bit)
IC4
WR
RD
OE
RAM (64K bit)
Data Bus (D0~D7)
X3
OSC
IC12
TONE GENERATOR LSI
DB0~DB7
SALE
SWR, SRD
RIN
SC, PC
RST
MCK
WRP0~7, RDP0~7
WDL0~11
ENWDU0~2
Address (A0~A17)
IC15, IC17-1
D/A Converter
IC17-2, Z3, IC19
Level Shifter
IC13
Wave ROM
Data (D0~D15)
SALE
SWR, SRD
DB0~DB7
TONE GENERATOR LSI
IC14
WDL0~11
ENWDU0~2
WRP0~7, RDP0~7
IC16, IC18-1
D/A Converter
IC18-2, Z4, IC20
Level Shifter
IC24~27
Solo (1ch)
Bass (1ch)
U.Poly / Accomp (3ch)
Drum Percussion (3ch)
Analog Buffer Memory
IC28~31
Upper Poly (4ch)
Lower Poly (4ch)
IC23-1
IC22-2
IC22-1
IC21-1
IC53-1
IC23-2
Tone Select Control
IC39-2
Low-Pass Filter
IC34-1
Mixing
IC34-2
Low-Pass Filter
TONE SELECTOR
PB1
Q11
PB2
Q10
PB3
Q13
IC36-1
Mixing
IC36-2
Low-Pass Filter
VR1
BBD Bias
IC50~52
BBD
BBD
BBD
IC44
Drum Percussion
IC68-2
Low-Pass Filter
LMS
IC11-1
Integrator
IC45-2
Phase Shifter
IC45-1
Phase Shifter
IC46
Effect Controller
IC47~49
Clock Generator
LMF
IC11-2
Integrator
Q2
Inverter
EFNG
SYSTEM ASSIGNER BLOCK
DIGITAL SOUND PROCESSOR BLOCK
TONE FILTER & MIXING BLOCK

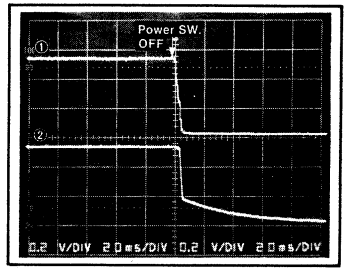

5
6
7
8
9
10
11
12
13
14
MKB1
MKB2
DB0～DB5
SWITCHES
CN1
IC1
UKBS, LKBS
Decoder
AB0～AB2
PKB
Q1
Current Regulator
SWITCHES
Q2, Q4～17
Key Scan Circuit
CN1
FSW
E
EXP
-15
CN3
CN2
EXP
CN1
EXP
-15
Foot SW.
CdS
Lamp
LED'S
DB0～DB5
LKBS, UKBS
AB0～AB2
AN0, AN1
EXP, FSW
CN3
JK8
a Bus
AUX
Tone Select Control
IC39-2
Low-Pass Filter
Bass
WRP0～7, RDP0～7
IC12
IC15, IC17-1
IC17-2
Z3, IC19
IC24～27
IC23-1
IC34-1
Mixing
IC34-2
Low-Pass Filter
Solo
X3
OSC
TONE GENERATOR LSI
WDL0～11
D/A Converter
Level Shifter
Solo (1 ch)
Bass (1 ch)
U. Poly / Accomp (3 ch)
Drum Percussion (3 ch)
IC22-2
IC22-1
IC21-1
TONE SELECTOR
Q11
Q10
Q13
PB1
PB2
PB3
DB0～DB7
SALE
SWR, SRD
RIN
ENWDU0～2
Address (A0～A17)
IC13
Wave ROM
Data (D0～D15)
Analog Buffer Memory
SC, PC
RST
MCK
IC36-1
Mixing
IC36-2
Low-Pass Filter
VR1
BBD Bias
IC50～52
BBD
BBD
BBD
IC44-2
Low-Pass Filter
Q5
IC39-1
Mixing
IC41-1
VCA
IC42-1
I/V Converter
SO
IC41-2
VCA
IC42-2
I/V Converter
IC68-2
Low-Pass Filter
Drum Percussion
Drum Percussion
IC28～31
Upper Poly (4 ch)
Lower Poly (4 ch)
IC53-1
IC23-2
TONE GENERATOR LSI
IC14
SALE
SWR, SRD
DB0～DB7
IC16, IC18-1
IC18-2
Z4, IC20
WDL0～11
D/A Converter
Level Shifter
ENWDU0～2
WRP0～7, RDP0～7
IC11-1
LMS
Integrator
IC45-2
Phase Shifter
IC45-1
Phase Shifter
IC46
Effect Controller
IC47～49
Clock Generator
IC11-2
LMF
Integrator
Q2
Inverter
EFNG
IC10-2
C00
Integrator
IC10-1
C01
Integrator
Main Vol, EXP Control
JK5
Line Out
LO
CN12
CN1
PC1
AC IN
S1
Power SW.
T1
Power Transformer
AS
CN5
CN4
AC1
AC2
CN6
Primary Circuit
IC2
-15V Regulator
D1～6
IC1
+15V Regulator
IC3, Q4
+5V Switching Regulator
Rectifier
-15
+15
+5
RST1
-15
+15
+5
RST1
Q1, 2
Reset Circuit
Q3, 11
Relay Driver
Q5～10
Power Amplifier Circuit
SO
RL1
PA
LO
HP
JK1
PA
Head-phones Jack
SP
CN2
CN1
SP
WF
TW
CN3
SP 1
20cm 4Ω
SP 2
6.5cm, 8Ω
SP 3
6.5cm, 8Ω
DIGITAL SOUND PROCESSOR BLOCK
TONE FILTER & MIXING BLOCK

❶, ❷



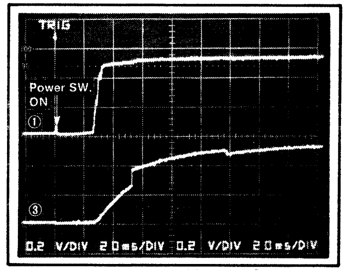
• Power SW..........................OFF → ON

❶, ❷



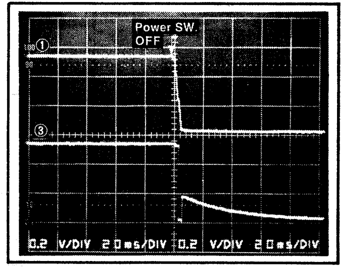
• Power SW..........................ON → OFF

❶, ❸



• Power SW..........................OFF → ON

❶, ❸



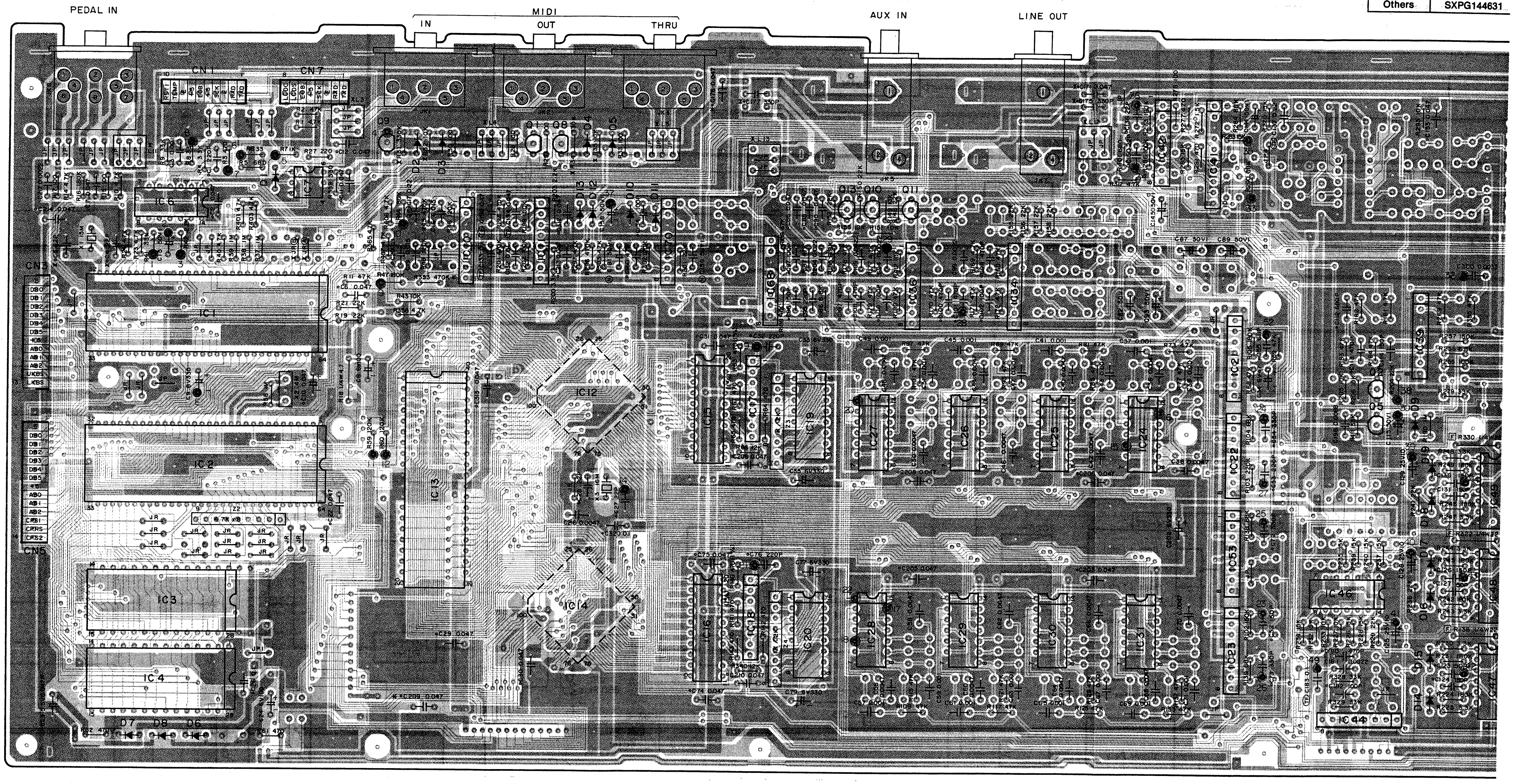
• Power SW..........................ON → OFF

MAIN MAIN CIRCUIT BOARD

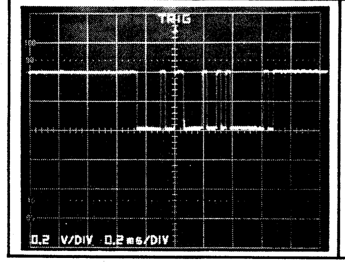
NOTE: Resistor marked JR on the printed circuit board are the impedance "ZERO ohm" resistors as the same as jumper wires.

∗P.C.B. Comparison chart by area.

Area	P.C.B. No.
M	SXPG144661
MC, EZ, XL	SXPG144671
Others	SXPG144631

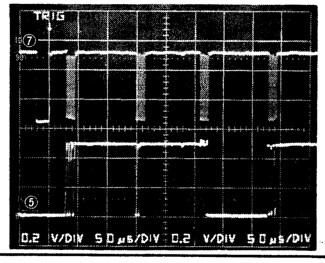

PEDAL IN
MIDI
IN
OUT
THRU
AUX IN
LINE OUT
CN1
CN7
CN3
CN5
IC1
IC2
IC3
IC4
IC6
IC12
IC13
IC14
IC16
IC17
IC18
IC19
IC20
IC21
IC22
IC23
IC25
IC26
IC27
IC28
IC29
IC30
IC31
IC44
IC46
D6
D7
D8
Q9
Q10
Q11
JR

❹

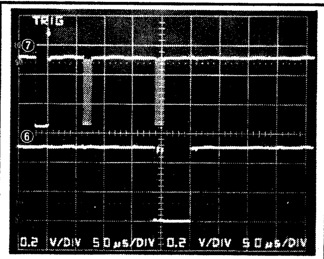


• MIDI Signal ....Out
• Upper C4 key ....ON

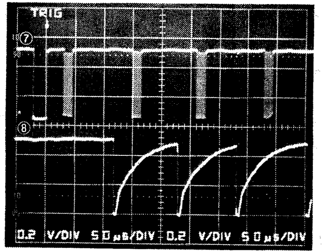
❼ SCK, ❺ TXD



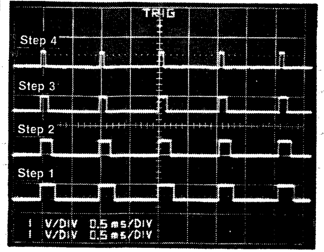
❼ SCK, ❻ RXD



❼ SCK, ❽ EOB

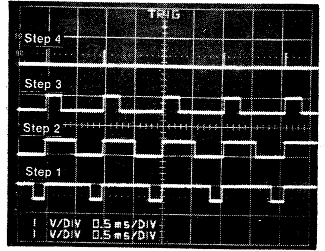


❾ Main Vol.,EXP Control



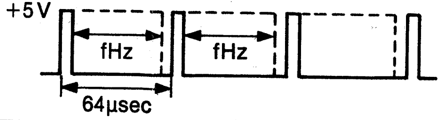
• Exp Pedal ....Max.
• Main Vol. ....Step 1~4
• Upper key ....ON

❿ Rhythem Vol. Control



• Drums Vol. ....Step 1~4
• Rhythm ....Start

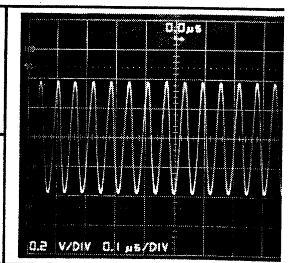
⓫, ⓬


+5V
fHz
fHz
64µsec

• Tremolo Fast 6.5Hz
• Tremolo Slow.......... 0.5Hz
• Celeste 0.5Hz

• Tremolo Fast 20Hz
• Tremolo Slow............ 1Hz

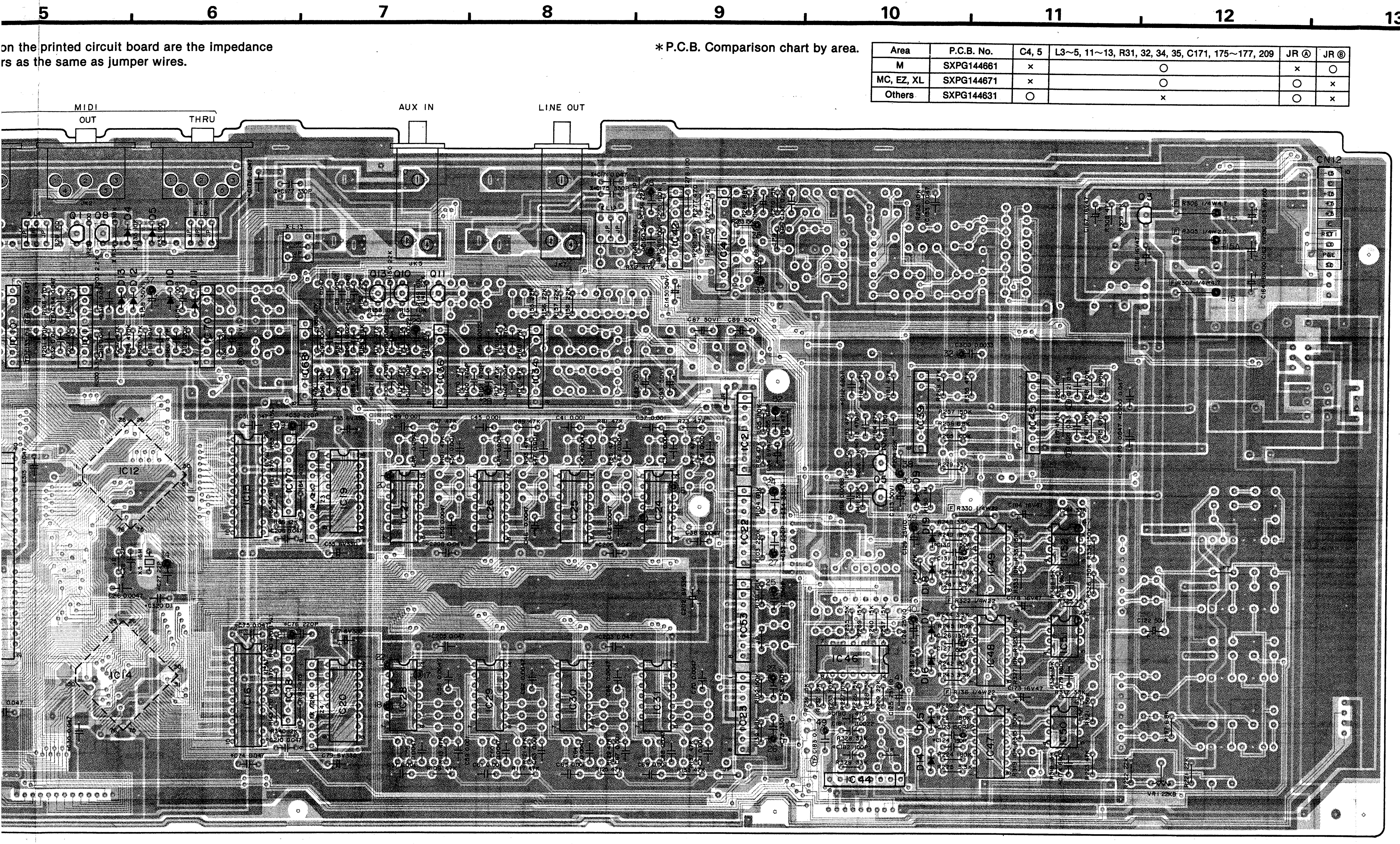
⓮ 16MHz



on the printed circuit board are the impedance
rs as the same as jumper wires.

∗P.C.B. Comparison chart by area.

Area	P.C.B. No.	C4, 5	L3~5, 11~13, R31, 32, 34, 35, C171, 175~177, 209	JR Ⓐ	JR Ⓑ
M	SXPG144661	×	○	×	○
MC, EZ, XL	SXPG144671	×	○	○	×
Others	SXPG144631	○	×	○	×


5
6
7
8
9
10
11
12
13
14
MIDI
OUT
THRU
AUX IN
LINE OUT
IC12
IC14
IC24
IC25
IC26
IC27
IC28
IC29
IC30
IC31
IC44
IC46
IC47
IC48
IC49
CN12
VR1 22KB

∗Products for (M) area.

SXPG144661

∗Products for (EZ), (MC) and (XL) areas.

SXPG144671

∗Other areas.

SXPG144631

Circuit view on top of P.C.B.

NOTES:

- IC'S

IC1:	SVIG7810HCW
IC2:	SVIGM6050211
IC3:	SVIG5EX15AX1
IC4:	SVIGD446415L
IC6:	SVIGM74LS05
IC7:	SVIGTLP513
IC10, 11, 21~23, 34, 36, 39, 42, 44, 45, 53, 68, 70:	SVIGM5218L
IC12, 14:	MN6635
IC13:	SVIGU3C04615
IC15, 16:	SVIGBA9221
IC17, 18:	SVIGM5238L
IC19, 20:	MN74HC4051
IC24~31:	MN74HC4066
IC41:	SVIGM5241L
IC46:	SVIGUPD4066B
IC47~49:	SVIGMSM4011
IC50~52:	MN3006

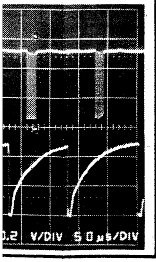
- TRANSISTORS

Q1~3:	2SC2320LFG
Q5, 10, 11, 13:	2SJ105GR
Q8, 9:	2SA1015-GR

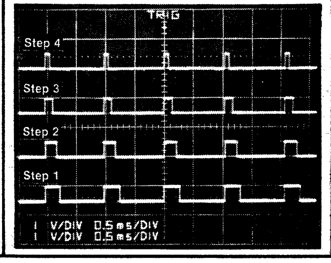
- DIODES

D1~19:	MA165TA5

OB

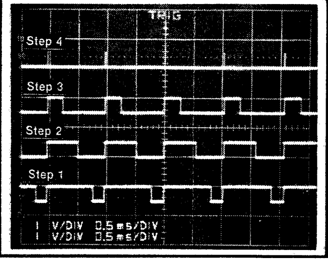


❾ Main Vol.,EXP Control



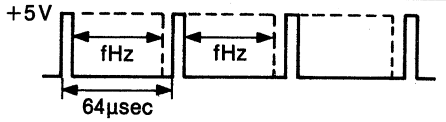
- Exp Pedal .... Max.
- Main Vol. .... Step 1~4
- Upper key .... ON

❿ Rhythem Vol. Control



- Drums Vol. .... Step 1~4
- Rhythm .... Start

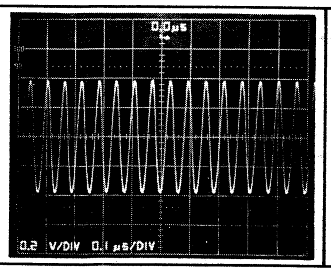
⓫, ⓬


+5V
fHz
fHz
64µsec

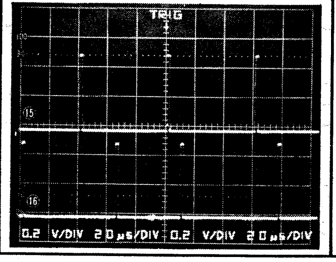
- Tremolo Fast 6.5Hz
- Tremolo Slow 0.5Hz
- Celeste 0.5Hz

- Tremolo Fast 20Hz
- Tremolo Slow 1Hz

⓮ 16MHz

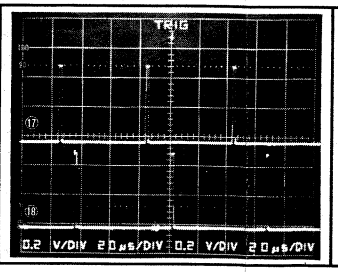


⓯ RDP0, ⓰ WRP0



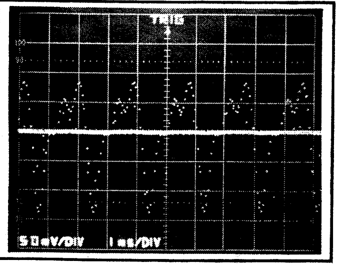
- Upper key .... C4 ON

⓱ WRP0, ⓲ RDP0



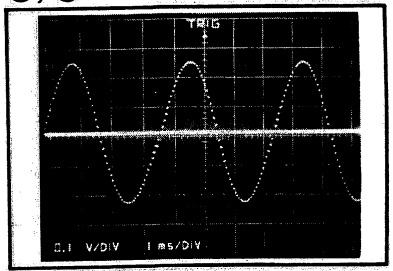
- Rhythm .... Start
- Lower key C

⓳, ⓴



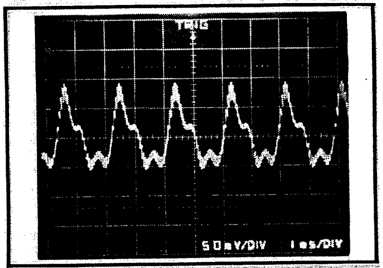
- U. Solo .... Flute
- Solo Vol. .... Max.
- Upper key C3

㉑, ㉒



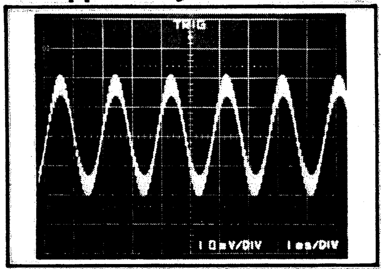
• L. Tab.	Flute 8′
• L. Poly Vol.	Max.
• Lower key	C3

㉓ Solo



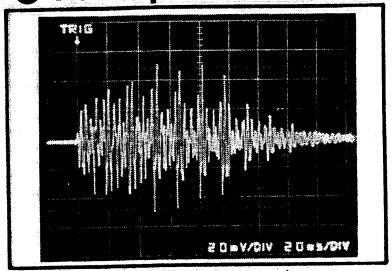
• U. Solo	Flute
• Upper key	C4
• Solo Vol.	Max.

㉔ Upper Poly



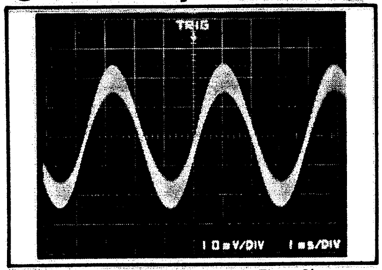
• U. Tab.	Flute 8′
• U. Poly Vol.	Max.
• Upper key	C4

㉕ Accomp



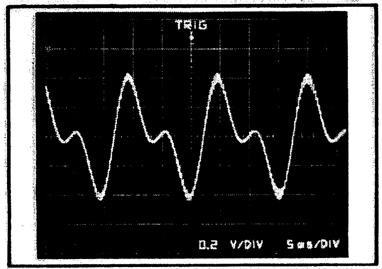
- Rhythm: March • Tempo: ♩=120
- Play Mode: Fingered • Lower key: C
- Accomp: 1/2 ON • Accomp Vol.: Max.

㉖ Lower Poly



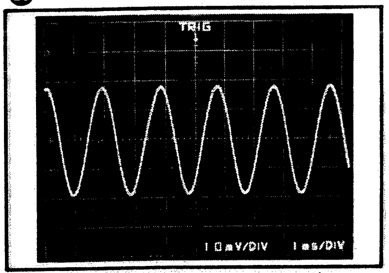
• L. Tab.	Flute 8′
• L. Poly Vol.	Max.
• Lower key	C3

㉗ Bass



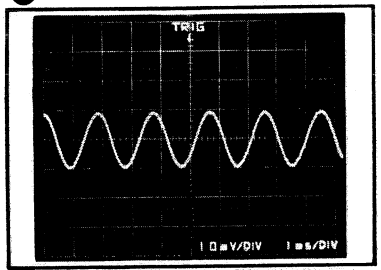
• Bass	16′
• Bass key	C2
• Bass Vol.	Max.

㉘



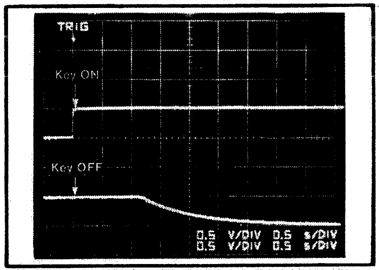
• U. Tab.	Flute 8′
• U. Poly Vol.	Max.
• Upper key	C4

㉙



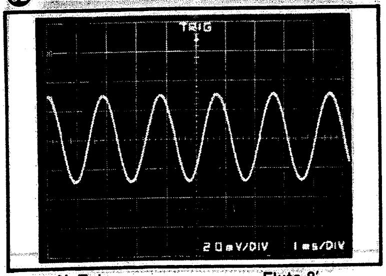
• U. Tab.	Flute 8′
• U. Poly Vol.	Max.
• Upper key	C4
• U. Tab. Effect	Celeste

㉚ EFNG



• Conductor	U. poly
• U. Tab. Effect	Celeste
• Upper key	ON → OFF OFF → ON

㉜



• U. Tab.	Flute 8′
• U. Poly Vol.	Max.

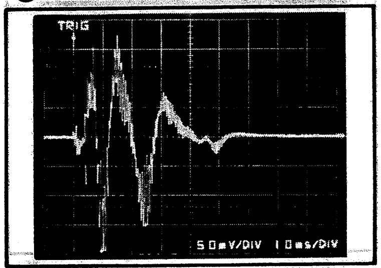
- Upper key: C4 • Effect: OFF

㉝ Drums Vol. Control

- Drums Volume

Step 1	−10.8V
Step 2	−7.0V
Step 3	−3.5V
Step 4	−0V

㉞ Drum Percussion



• Rhythm	March
• Tempo	♩=120
• Drums Vol.	Max.

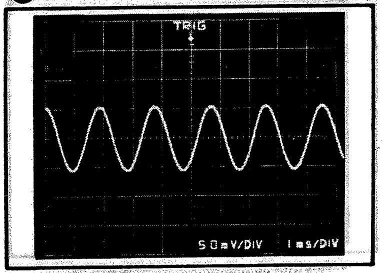
㉟ Main Vol., EXP Control

- Main Volume

Step 1	−3.8V
Step 2	−3.0V
Step 3	−2.2V
Step 4	−1.4V

• EXP Pedal	Max.
• Main Vol.	Step 1~4
• Upper key	ON

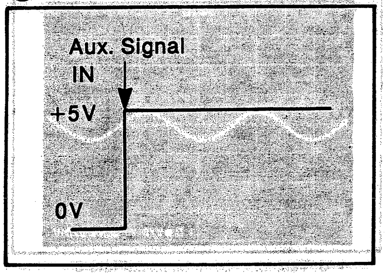
㊱



• U. Tab.	Flute 8′

- U. Poly Vol. Main Vol.: Max.
- EXP Pedal: Max. • Upper key: C4

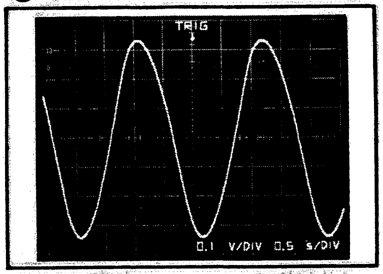
㊲



㊳

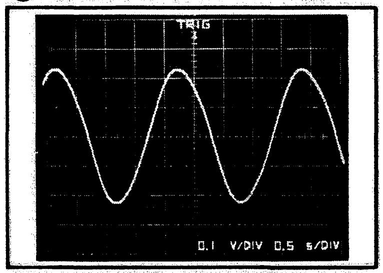
- Effect
  Celeste.......................... 0V
  Tremolo.................. +15V

㊴ Celeste



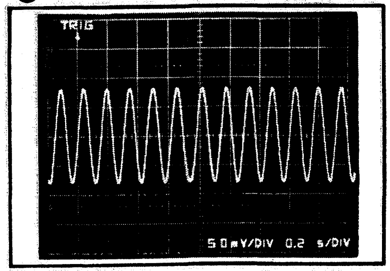
- Effect ....Celeste

㊴ Tremolo Slow



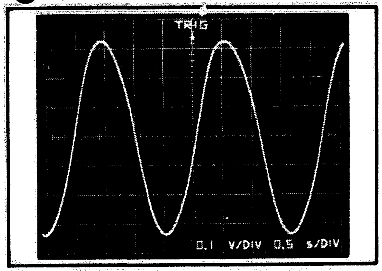
- Effect ....Tremolo Slow

㊴ Tremolo Fast



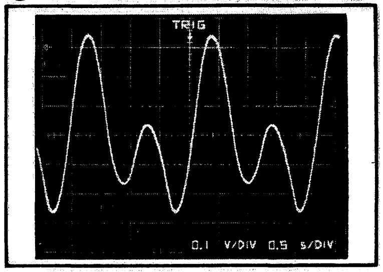
- Effect ....Tremolo Fast

㊵ Celeste



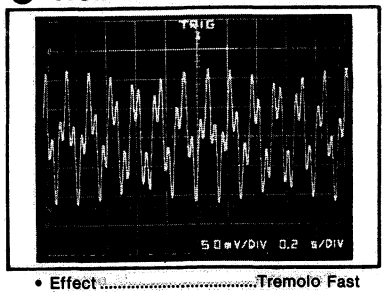
- Effect ....Celeste

㊵ Tremolo Slow



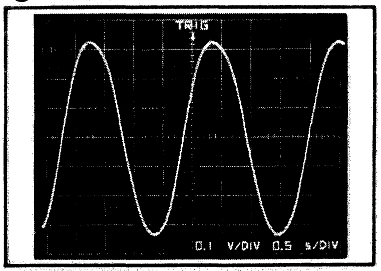
- Effect ....Tremolo Slow

㊵ Tremolo Fast



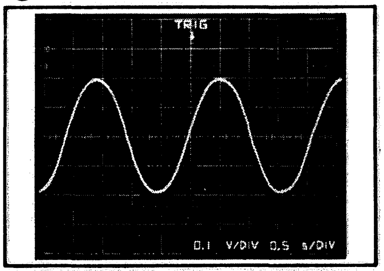
- Effect ....Tremolo Fast

㊶ Celeste



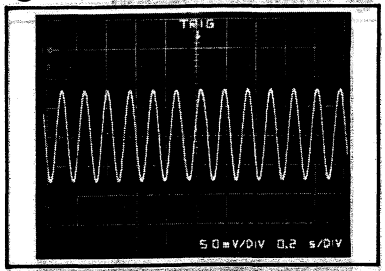
- Effect ....Celeste

㊶ Tremolo Slow



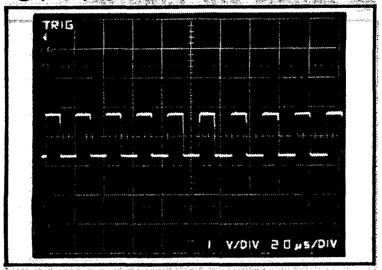
- Effect ....Tremolo Slow

㊶ Tremolo Fast



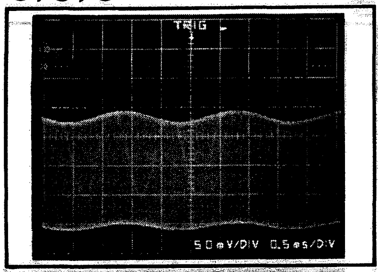
- Effect ....Tremolo Fast

㊷, ㊸, ㊹



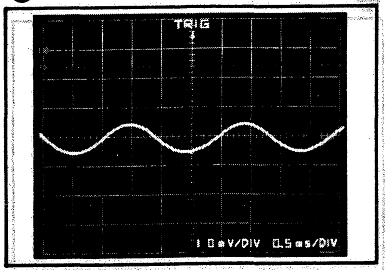
- Effect ....Celeste

㊺, ㊻, ㊼



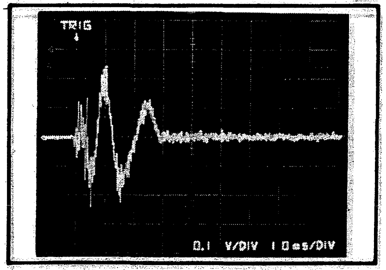
- U. Tab. ....Flute 8'
- U. Poly Vol. ....Max.
- Upper key C4
- U. Tab. Effect.........................Celeste

㊽



- U. Tab. ....Flute 8'
- U. Poly Vol. ....Max.
- Upper key C4
- U. Tab. Effect.........................Celeste

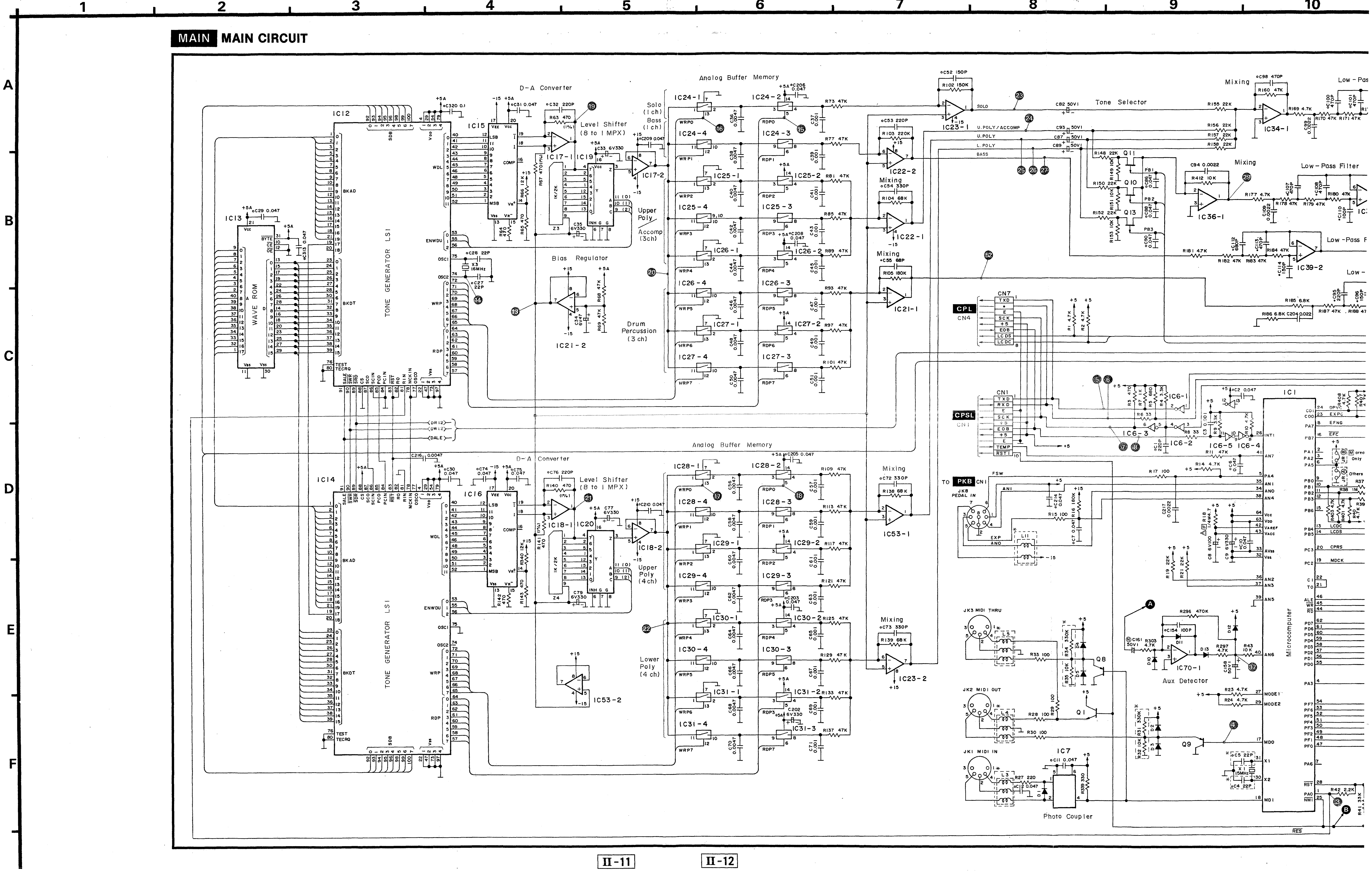
(52)

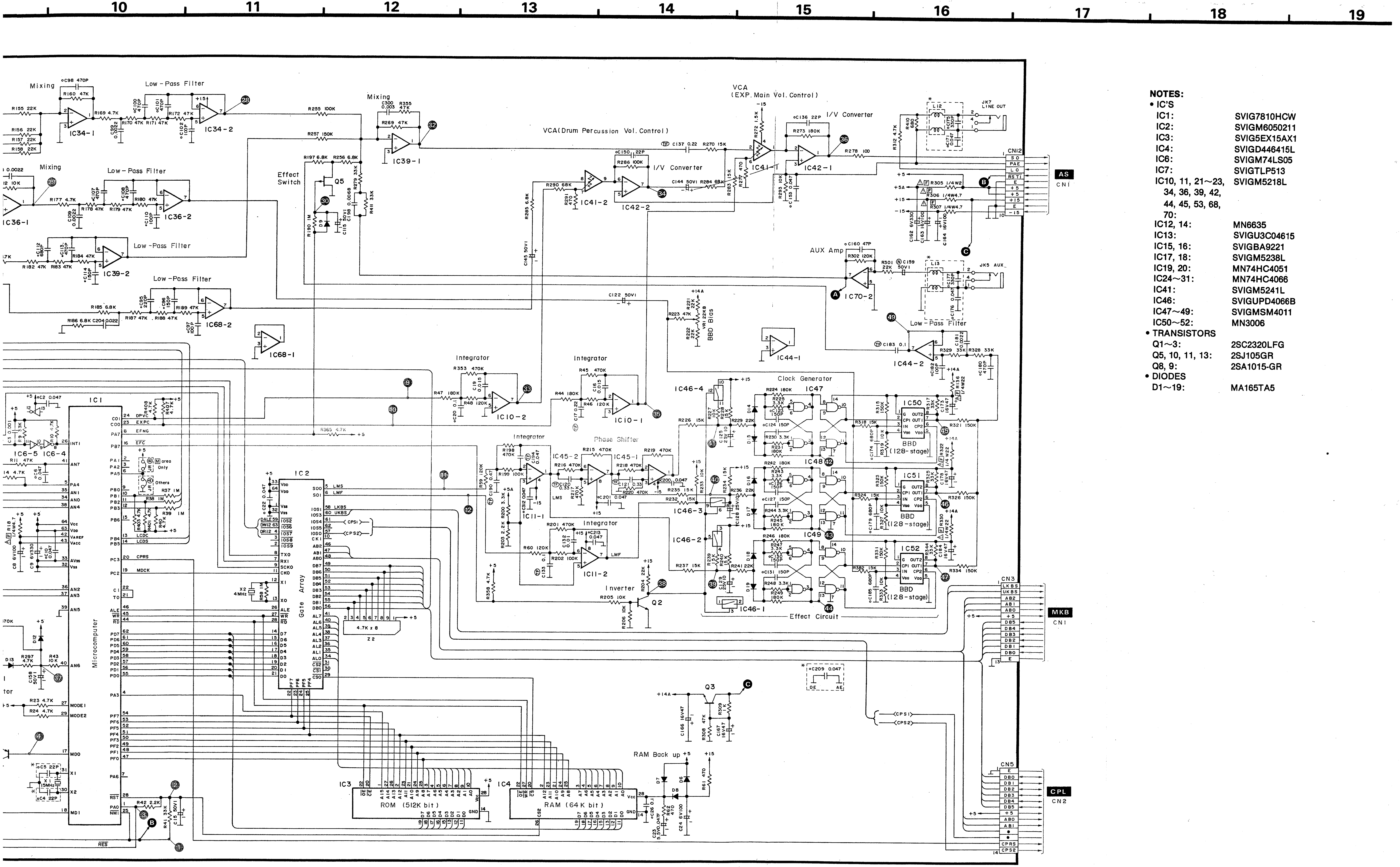


- Rhythm ....MARCH
- Tempo .... ♩=120
- Drums Vol. ....Max

MAIN

MAIN CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
MAIN MAIN CIRCUIT
IC12
IC13
WAVE ROM
TONE GENERATOR LSI
IC14
IC15
IC16
D-A Converter
Level Shifter (8 to 1 MPX)
IC17-1
IC19
IC17-2
IC18-1
IC20
IC18-2
Bias Regulator
IC21-2
IC53-2
Analog Buffer Memory
Solo (1 ch)
Bass (1 ch)
Upper Poly
Accomp (3ch)
Drum Percussion (3 ch)
Upper Poly (4 ch)
Lower Poly (4 ch)
IC24-1
IC24-2
IC24-4
IC24-3
IC25-1
IC25-2
IC25-4
IC25-3
IC26-1
IC26-2
IC26-4
IC26-3
IC27-1
IC27-2
IC27-4
IC27-3
IC28-1
IC28-2
IC28-4
IC28-3
IC29-1
IC29-2
IC29-4
IC29-3
IC30-1
IC30-2
IC30-4
IC30-3
IC31-1
IC31-2
IC31-4
IC31-3
Mixing
IC23-1
IC22-2
IC22-1
IC21-1
IC53-1
IC23-2
SOLO
U.POLY/ACCOMP
U.POLY
L.POLY
BASS
Tone Selector
Q11
Q10
Q13
Mixing
IC34-1
IC36-1
Low-Pass Filter
IC39-2
CPL
CN4
CN7
TXD
SCK
+5
EOB
LCDS
LCDC
CPSL
CN1
RXD
VD
TEMP
RST1
IC6-1
IC6-3
IC6-2
IC6-5
IC6-4
IC1
Microcomputer
TO PKB CN1
FSW
JK8 PEDAL IN
EXP
ANO
L11
JK3 MIDI THRU
JK2 MIDI OUT
JK1 MIDI IN
L5
L4
L3
Q8
Q1
Q9
IC7
Photo Coupler
IC70-1
Aux Detector
X1 15MHz
RES
A
B


10
11
12
13
14
15
16
17
18
19
Mixing
Low-Pass Filter
IC34-1
IC34-2
IC36-1
IC36-2
IC39-2
IC68-2
IC68-1
Effect Switch
Q5
IC39-1
VCA(Drum Percussion Vol. Control)
IC41-2
IC42-2
I/V Converter
VCA (EXP. Main Vol. Control)
IC41-1
IC42-1
AUX Amp
IC70-2
Low-Pass Filter
IC44-2
IC44-1
BBD Bias
Integrator
IC10-2
IC10-1
IC11-1
IC11-2
Phase Shifter
IC45-2
IC45-1
Inverter
Q2
Clock Generator
IC47
IC48
IC49
IC46-4
IC46-3
IC46-2
IC46-1
IC50
IC51
IC52
BBD (128-stage)
Effect Circuit
IC1
Microcomputer
IC2
Gate Array
IC6-5
IC6-4
Z2
4.7K x 8
IC3
ROM (512K bit)
IC4
RAM (64K bit)
RAM Back up
Q3
JK7 LINE OUT
JK5 AUX
CN12
AS
CN1
CN3
MKB
CN1
CN5
CPL
CN2

NOTES:

- IC'S

IC1:	SVIG7810HCW
IC2:	SVIGM6050211
IC3:	SVIG5EX15AX1
IC4:	SVIGD446415L
IC6:	SVIGM74LS05
IC7:	SVIGTLP513
IC10, 11, 21~23, 34, 36, 39, 42, 44, 45, 53, 68, 70:	SVIGM5218L
IC12, 14:	MN6635
IC13:	SVIGU3C04615
IC15, 16:	SVIGBA9221
IC17, 18:	SVIGM5238L
IC19, 20:	MN74HC4051
IC24~31:	MN74HC4066
IC41:	SVIGM5241L
IC46:	SVIGUPD4066B
IC47~49:	SVIGMSM4011
IC50~52:	MN3006

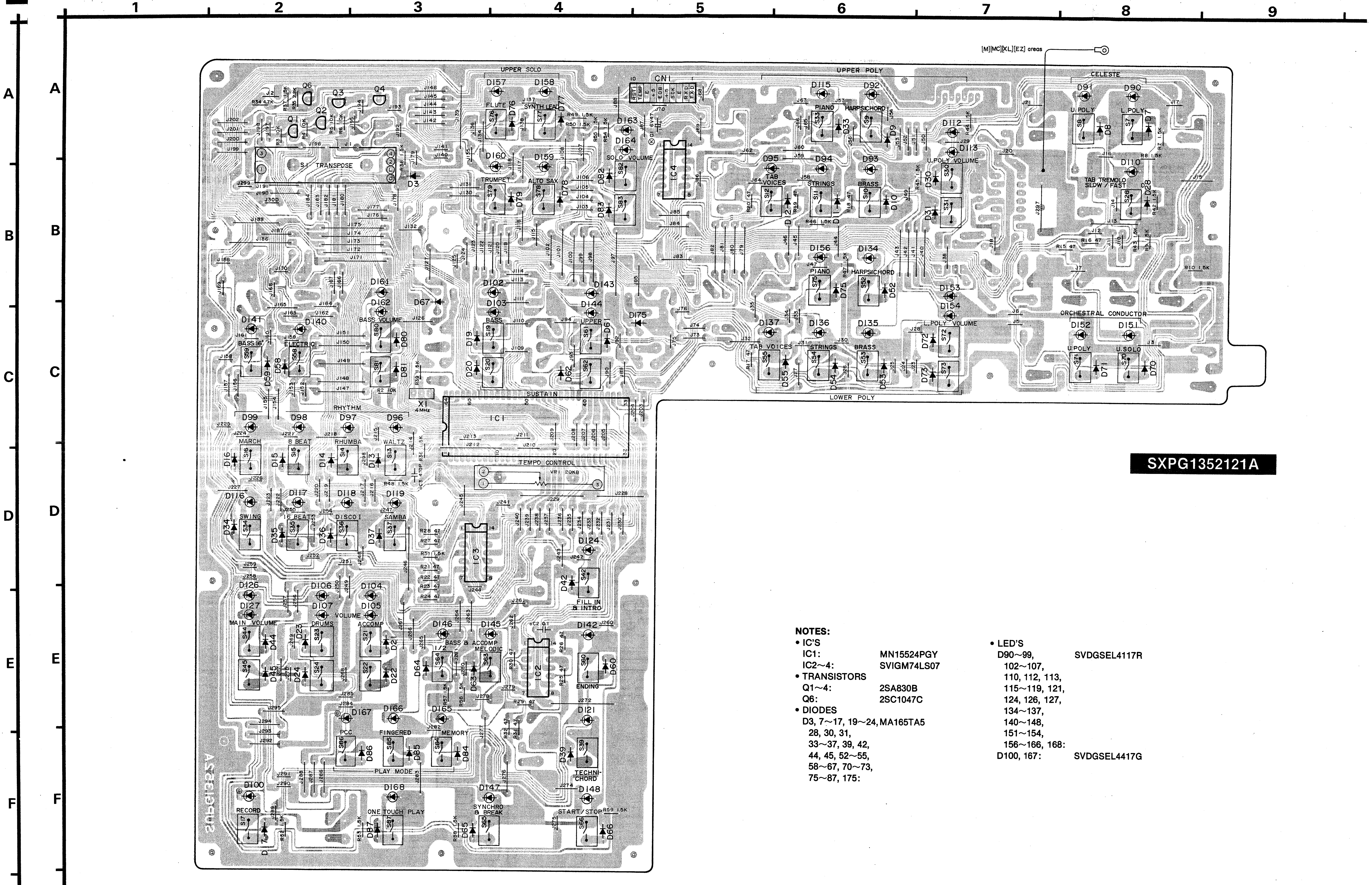
- TRANSISTORS

Q1~3:	2SC2320LFG
Q5, 10, 11, 13:	2SJ105GR
Q8, 9:	2SA1015-GR

- DIODES

D1~19:	MA165TA5

SIDE CONTROL PANEL CIRCUIT BOARD

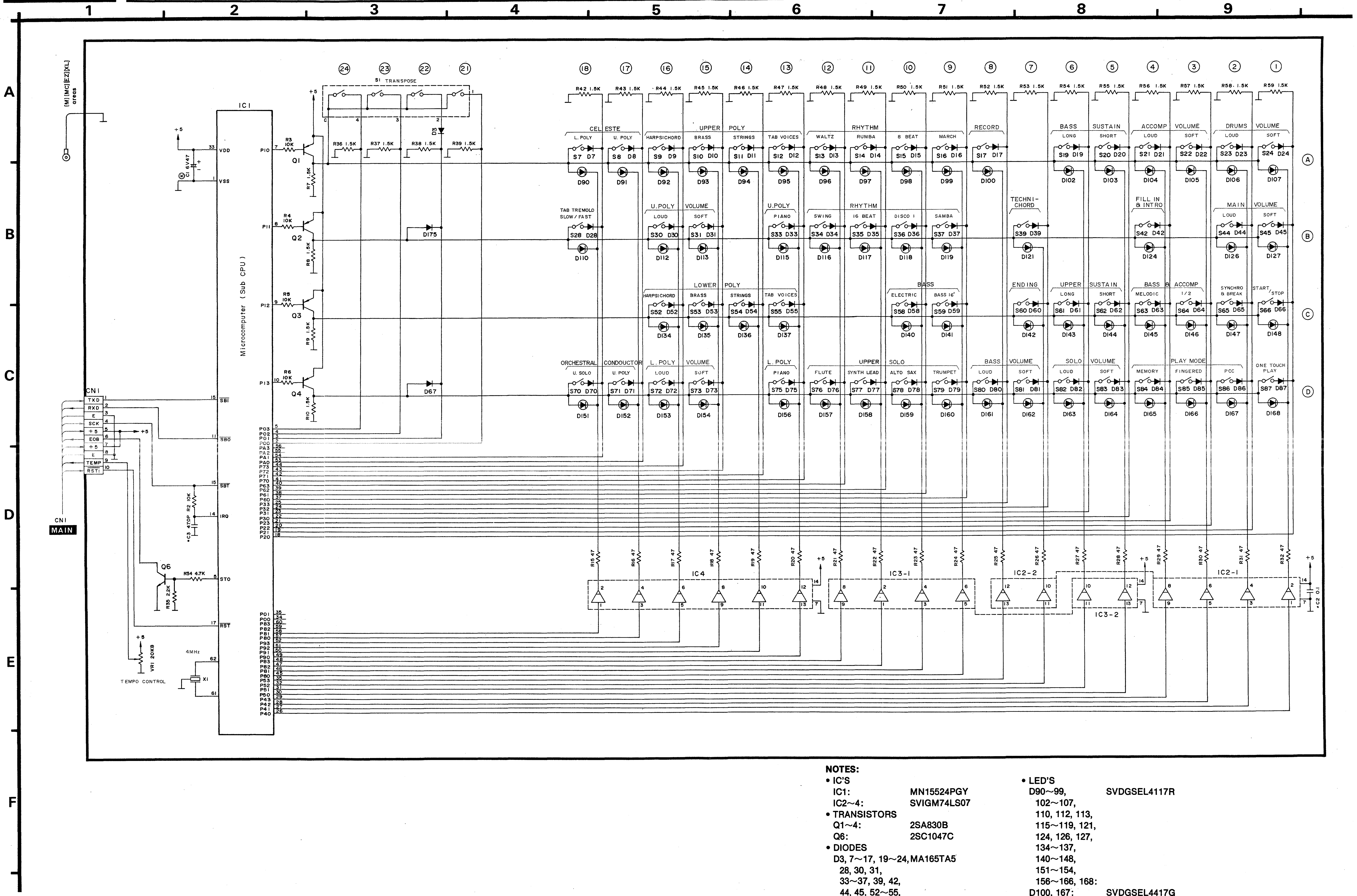

1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
[M][MC][XL][EZ] areas
UPPER SOLO
FLUTE
SYNTH LEAD
TRUMPET
ALTO SAX
SOLO VOLUME
CN1
UPPER POLY
PIANO
HARPSICHORD
TAB VOICES
STRINGS
BRASS
U.POLY VOLUME
CELESTE
U.POLY
L.POLY
TAB TREMOLO SLOW / FAST
S1 TRANSPOSE
Q1
Q2
Q3
Q4
Q6
IC1
IC2
IC3
IC4
X1 4MHz
VR1 20KB
BASS 16'
ELECTRIC
BASS VOLUME
BASS
UPPER
SUSTAIN
L.POLY VOLUME
ORCHESTRAL CONDUCTOR
U.SOLO
LOWER POLY
RHYTHM
MARCH
8 BEAT
RHUMBA
WALTZ
TEMPO CONTROL
SWING
16 BEAT
DISCO
SAMBA
FILL IN & INTRO
MAIN VOLUME
DRUMS
VOLUME
ACCOMP
BASS & ACCOMP
1/2
MELODIC
ENDING
PCC
FINGERED
MEMORY
PLAY MODE
TECHNI-CHORD
RECORD
ONE TOUCH PLAY
SYNCHRO & BREAK
START/STOP
SXPG1352121A

NOTES:

- IC'S
  - IC1: MN15524PGY
  - IC2~4: SVIGM74LS07
- TRANSISTORS
  - Q1~4: 2SA830B
  - Q6: 2SC1047C
- DIODES
  - D3, 7~17, 19~24, 28, 30, 31, 33~37, 39, 42, 44, 45, 52~55, 58~67, 70~73, 75~87, 175: MA165TA5
- LED'S
  - D90~99, 102~107, 110, 112, 113, 115~119, 121, 124, 126, 127, 134~137, 140~148, 151~154, 156~166, 168: SVDGSEL4117R
  - D100, 167: SVDGSEL4417G

CPSL

SIDE CONTROL PANEL CIRCUIT DIAGRAM



1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
[M][MC][EZ][XL] areas
IC1
Microcomputer (Sub CPU)
VDD
VSS
P10
P11
P12
P13
SBI
SBO
SBT
IRQ
STO
RST
C1 6V47
R3 10K
R4 10K
R5 10K
R6 10K
Q1
Q2
Q3
Q4
Q6
R7 1.5K
R8 1.5K
R9 1.5K
R10 1.5K
R34 4.7K
R35 2.2K
R2 10K
C3 470P
VR1 20KB
TEMPO CONTROL
4MHz
X1
CN1
TXD
RXD
E
SCK
+5
EOB
TEMP
RST1
CN1
MAIN
S1 TRANSPOSE
D3
D175
D67
R36 1.5K
R37 1.5K
R38 1.5K
R39 1.5K
㉔
㉓
㉒
㉑
⑱
⑰
⑯
⑮
⑭
⑬
⑫
⑪
⑩
⑨
⑧
⑦
⑥
⑤
④
③
②
①
R42 1.5K
R43 1.5K
R44 1.5K
R45 1.5K
R46 1.5K
R47 1.5K
R48 1.5K
R49 1.5K
R50 1.5K
R51 1.5K
R52 1.5K
R53 1.5K
R54 1.5K
R55 1.5K
R56 1.5K
R57 1.5K
R58 1.5K
R59 1.5K
CELESTE
L. POLY
U. POLY
UPPER POLY
HARPSICHORD
BRASS
STRINGS
TAB VOICES
RHYTHM
WALTZ
RUMBA
8 BEAT
MARCH
RECORD
BASS
LONG
SUSTAIN
SHORT
ACCOMP
LOUD
VOLUME
SOFT
DRUMS
LOUD
VOLUME
SOFT
TAB TREMOLO SLOW/FAST
U. POLY
LOUD
VOLUME
SOFT
U.POLY
PIANO
RHYTHM
SWING
16 BEAT
DISCO I
SAMBA
TECHNI-CHORD
FILL IN & INTRO
MAIN
LOUD
VOLUME
SOFT
LOWER POLY
HARPSICHORD
BRASS
STRINGS
TAB VOICES
BASS
ELECTRIC
BASS 16'
ENDING
UPPER
LONG
SUSTAIN
SHORT
BASS & ACCOMP
MELODIC
1/2
SYNCHRO & BREAK
START/STOP
ORCHESTRAL
U. SOLO
CONDOUCTOR
U. POLY
L. POLY
LOUD
VOLUME
SOFT
L. POLY
PIANO
FLUTE
UPPER
SYNTH LEAD
SOLO
ALTO SAX
TRUMPET
BASS
LOUD
VOLUME
SOFT
SOLO
LOUD
VOLUME
SOFT
MEMORY
PLAY MODE
FINGERED
PCC
ONE TOUCH PLAY
Ⓐ
Ⓑ
Ⓒ
Ⓓ
IC4
IC3-1
IC2-2
IC3-2
IC2-1
R15 47
R16 47
R17 47
R18 47
R19 47
R20 47
R21 47
R22 47
R23 47
R24 47
R25 47
R26 47
R27 47
R28 47
R29 47
R30 47
R31 47
R32 47
C2 0.1

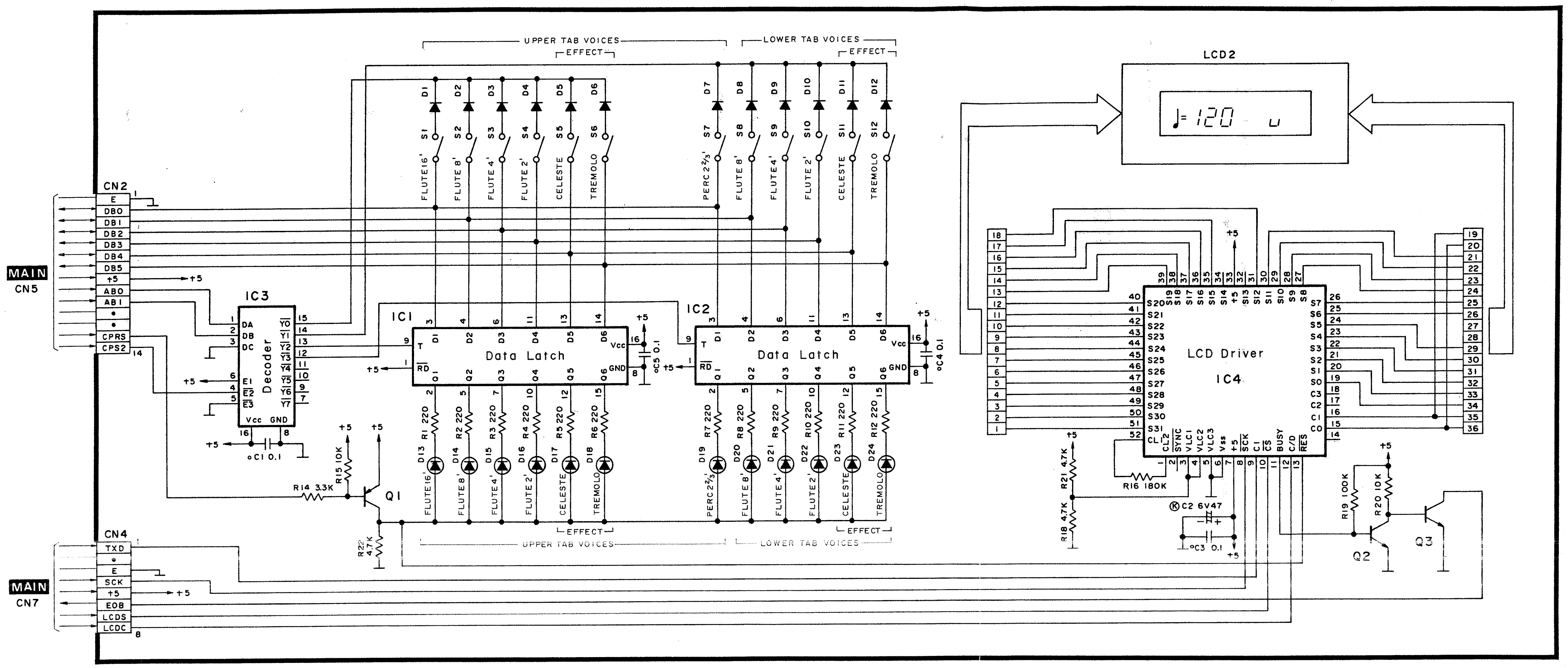
NOTES:

- IC'S
  - IC1: MN15524PGY
  - IC2~4: SVIGM74LS07
- TRANSISTORS
  - Q1~4: 2SA830B
  - Q6: 2SC1047C
- DIODES
  - D3, 7~17, 19~24, 28, 30, 31, 33~37, 39, 42, 44, 45, 52~55, 58~67, 70~73, 75~87, 175: MA165TA5
- LED'S
  - D90~99, 102~107, 110, 112, 113, 115~119, 121, 124, 126, 127, 134~137, 140~148, 151~154, 156~166, 168: SVDGSEL4117R
  - D100, 167: SVDGSEL4417G

CPL CONTROL PANEL LEFT CIRCUIT BOARD & CIRCUIT DIAGRAM

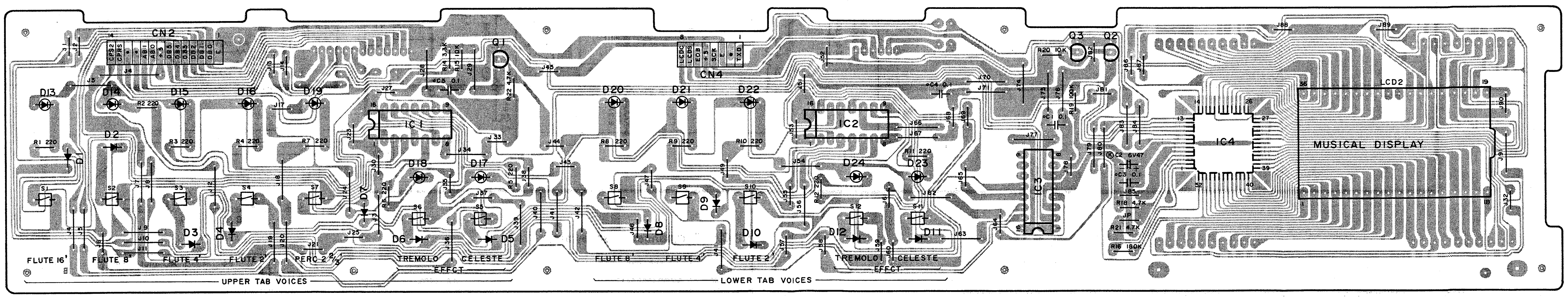
1 2 3 4 5 6 7 8 9

A B C D E F



MAIN CN5
MAIN CN7
CN2
E
DB0
DB1
DB2
DB3
DB4
DB5
+5
AB0
AB1
CPRS
CPS2
CN4
TXD
E
SCK
+5
EOB
LCDS
LCDC
IC3
Decoder
IC1
Data Latch
IC2
Data Latch
UPPER TAB VOICES
LOWER TAB VOICES
EFFECT
D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12
FLUTE 16'
FLUTE 8'
FLUTE 4'
FLUTE 2'
CELESTE
TREMOLO
PERC 2⅔
R14 3.3K
R15 10K
R22 4.7K
Q1
C1 0.1
C4 0.1
C5 0.1
R1 220
R2 220
R3 220
R4 220
R5 220
R6 220
R7 220
R8 220
R9 220
R10 220
R11 220
R12 220
D13 D14 D15 D16 D17 D18 D19 D20 D21 D22 D23 D24
LCD2
♩= 120
LCD Driver
IC4
R16 180K
R18 4.7K
R21 4.7K
C2 6V47
C3 0.1
R19 100K
R20 10K
Q2
Q3

SXPG144921



CN2
CN4
IC1
IC2
IC3
IC4
Q1
Q2
Q3
LCD2
MUSICAL DISPLAY
FLUTE 16'
FLUTE 8'
FLUTE 4'
FLUTE 2'
PERC 2⅔
TREMOLO
CELESTE
EFFECT
UPPER TAB VOICES
LOWER TAB VOICES

CPL NOTES:

- IC'S

IC1, 2:	SVIGM74LS174
IC3:	SVIGM74LS138
IC4:	SVIGUPD7225

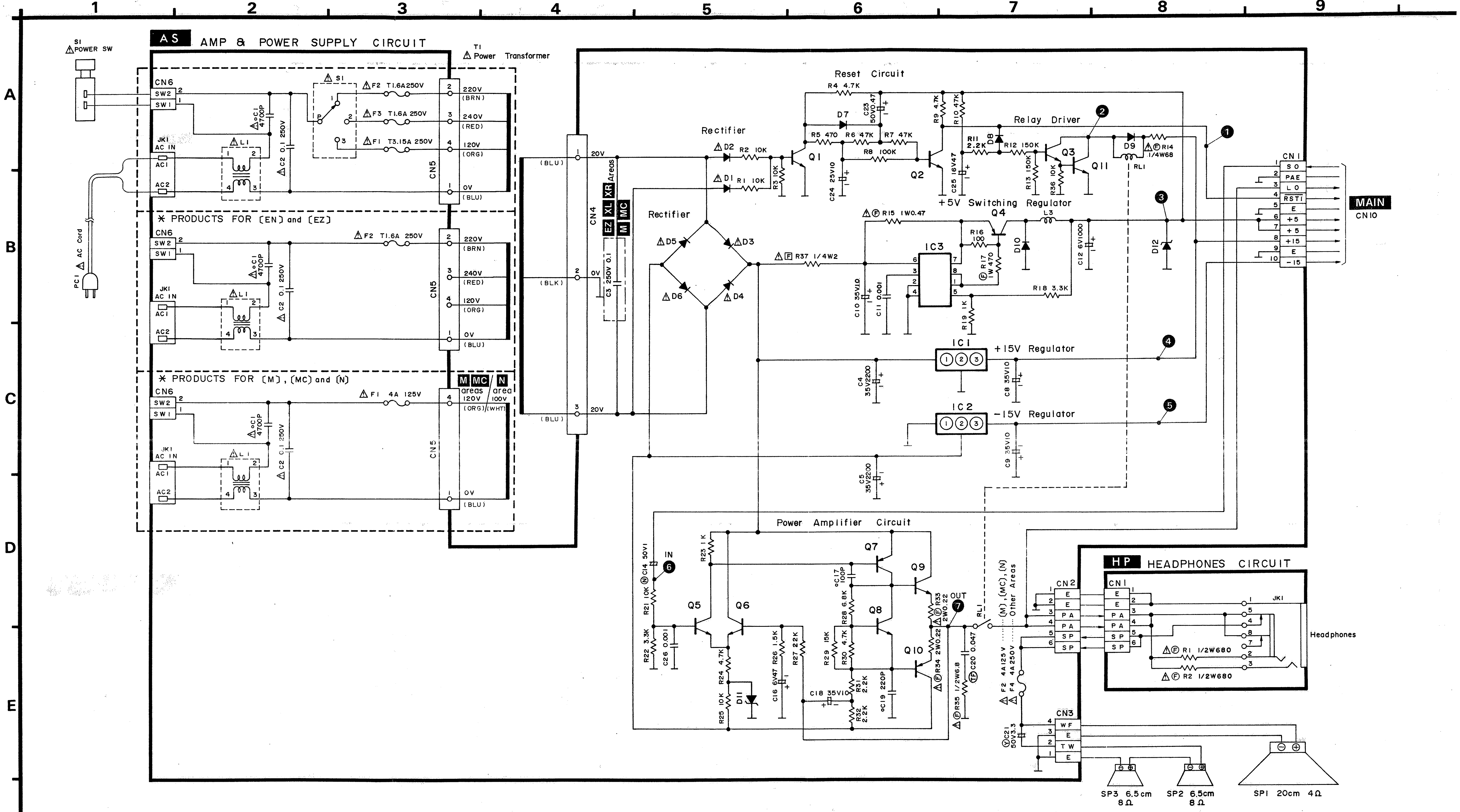
- TRANSISTORS

Q1:	2SA1015-GR
Q2, 3:	2SC2320LFG

- DIODES

D1～12:	MA165TA5
D13～24:	SVDGSEL4117R

AS HP AMP & POWER SUPPLY, HEADPHONES CIRCUIT DIAGRAM


1 2 3 4 5 6 7 8 9
A B C D E F
S1 POWER SW
AS AMP & POWER SUPPLY CIRCUIT
T1 Power Transformer
CN6
SW2
SW1
JK1 AC IN
AC1
AC2
PC1 AC Cord
C1 4700P
C2 0.1 250V
L1
S1
F2 T1.6A250V
F3 T1.6A 250V
F1 T3.15A 250V
CN5
220V (BRN)
240V (RED)
120V (ORG)
0V (BLU)
✱ PRODUCTS FOR [EN] and [EZ]
F2 T1.6A 250V
✱ PRODUCTS FOR [M], [MC] and [N]
F1 4A 125V
M MC areas 120V (ORG)
N area 100V (WHT)
CN4
EZ XL XR Areas
M MC
20V (BLU)
0V (BLK)
C3 250V 0.1
Rectifier
D2 R2 10K
D1 R1 10K
R3 10K
Q1
Reset Circuit
R4 4.7K
D7
C23 50V0.47
R5 470
R6 47K
R7 47K
R8 100K
C24 25V10
Q2
C25 16V47
R9 4.7K
R10 47K
Relay Driver
R11 2.2K
D8
R12 150K
Q3
Q11
R13 150K
R36 10K
D9
R14 1/4W68
RL1
+5V Switching Regulator
R15 1W0.47
Q4
R16 100
L3
D10
C12 6V1000
D12
D5
D3
D6
D4
R37 1/4W2
IC3
R17 1W470
C10 35V10
C11 0.001
R18 3.3K
R19 1K
IC1
+15V Regulator
C4 35V2200
C8 35V10
IC2
-15V Regulator
C5 35V2200
C9 35V10
CN1
SO
PAE
LO
RSTI
E
+5
+5
+15
E
-15
MAIN CN10
Power Amplifier Circuit
C14 50V1
IN
R21 10K
R22 3.3K
C26 0.001
Q5
Q6
R23 1K
R24 4.7K
R25 10K
D11
C16 6V47
R26 1.5K
R27 22K
Q7
C17 100P
Q9
R28 6.8K
Q8
R29 15K
R30 4.7K
R31 2.2K
R32 2.2K
C18 35V10
C19 220P
Q10
R33 2W0.22
R34 2W0.22
OUT
R35 1/2W6.8
C20 0.047
RL1
(M), (MC), (N) Other Areas
F2 4A125V
F4 4A250V
C21 50V3.3
CN2
E
E
PA
PA
SP
SP
CN3
WF
E
TW
E
HP HEADPHONES CIRCUIT
CN1
JK1
Headphones
R1 1/2W680
R2 1/2W680
SP3 6.5cm 8Ω
SP2 6.5cm 8Ω
SP1 20cm 4Ω

✱ P.C.B. Comparison chart by area.

Area	P.C.B. No.	C3	F1	F2	F3	F4	AC Inlet Cover
M. MC	SXPG1352241B	○	4A, 125V		×	×	SJS9231A
N	SXPG1352251B	×	4A, 125V		×	×	
EN	SXPG1352211B	×	×	1.6A, 250V	×	4A, 250V	
EZ	SXPG1352261B	○					
XL, XR	SXPG1352231B	○	3.15A, 250V	1.6A, 250V	1.6A, 250V	4A, 250V	SJS9334A
Others	SXPG1352221B	×					SJS9231A

NOTES:

- IC'S

IC1:	SVIGM5F7815
IC2:	SVIGM5F7915
IC3:	SVIGM5291P

- TRANSISTORS

Q1~3, 5, 6, 11:	2SC2320LFG
Q4:	2SB953A
Q7:	2SA1123R
Q8:	2SC1815GR
Q9:	2SD1277A
Q10:	2SB951A

- DIODES

D1, 2:	SVDGERA1502Y
D3~6:	SVDGS3V20-15
D7~9:	MA165TA5
D10:	SVDGRK14
D11:	MA4062
D12:	MA2062LF

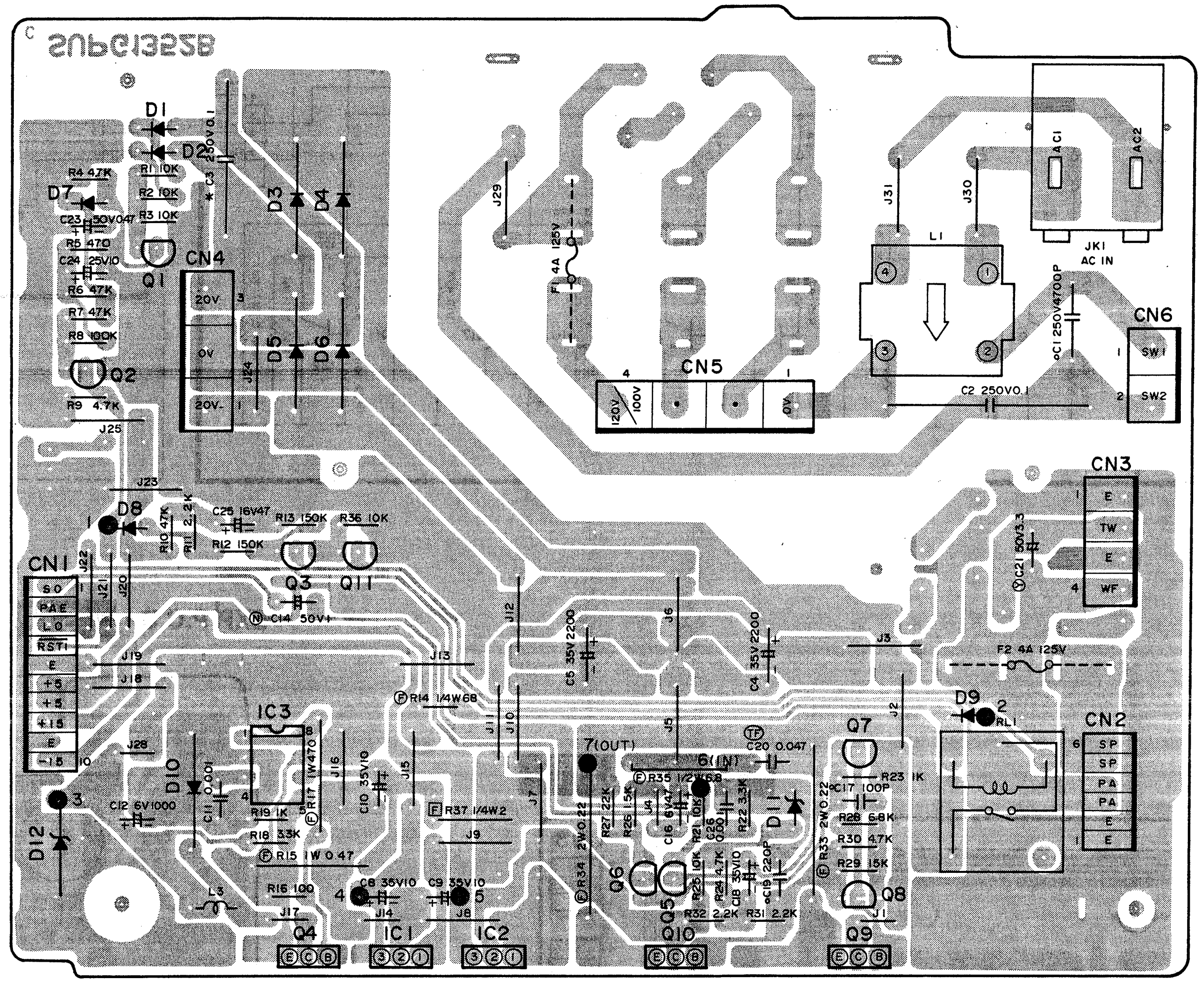
AMP & POWER SUPPLY CIRCUIT BOARD

■ Products for (M) and (MC) areas. **SXPG1352241B**

■ Products for (N) area. **SXPG1352251B**

■ Products for (EN) area. **SXPG1352211B**

■ Products for (EZ) area. **SXPG1352261B**

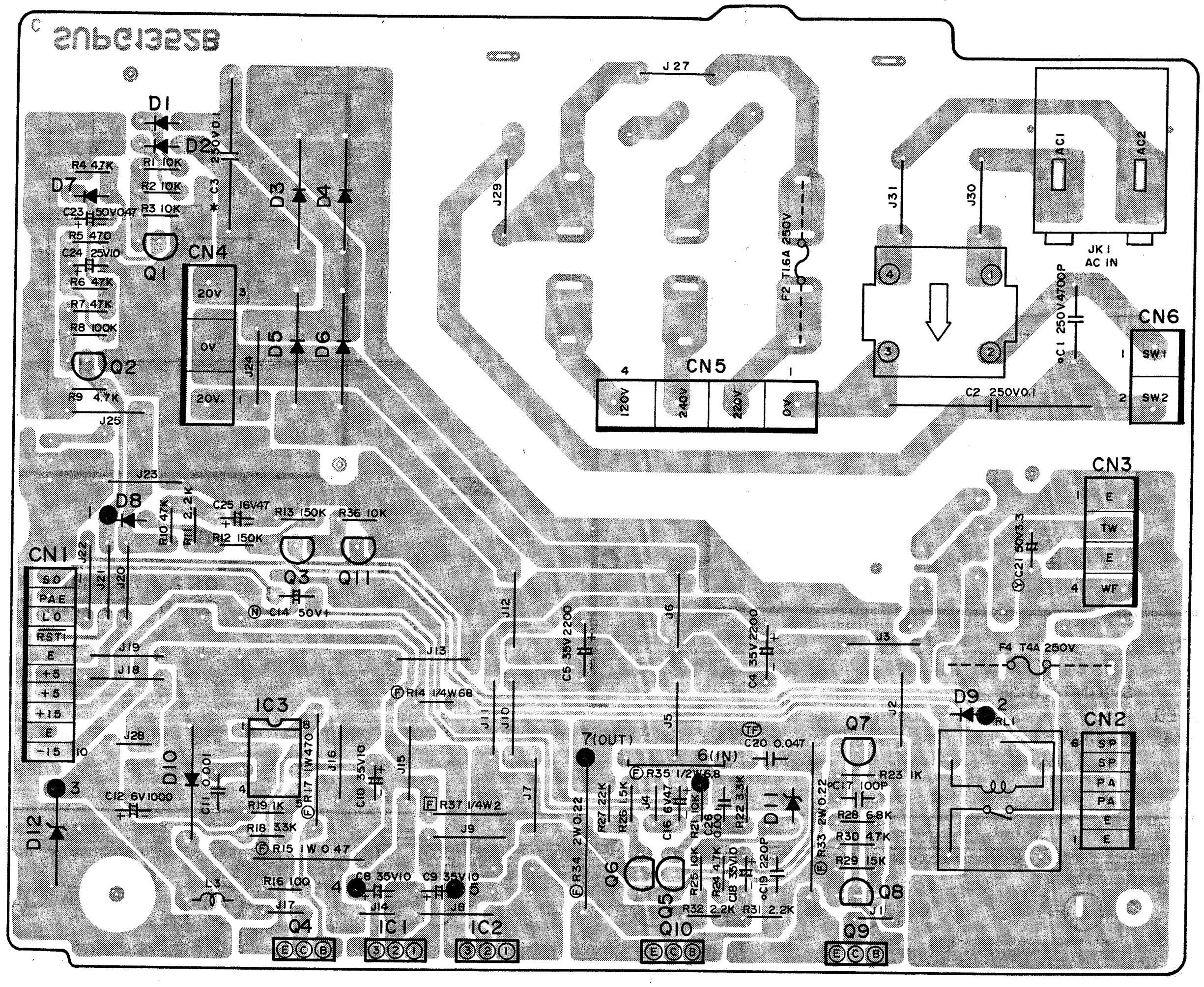

SUPG1352B
CN1
CN2
CN3
CN4
CN5
CN6
JK1 AC IN
L1
F1 4A 125V
F2 4A 125V
IC1
IC2
IC3
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
RL1
7(OUT)
6(IN)
C2 250V0.1
C4 35V2200
C5 35V2200
120V
100V
0V

NOTES:
- FUSES

M **MC** F1, F2: XBA1C40NU100
N F1, 2: XBA1C40NS5

*P.C.B. Comparison chart by area.

Area	P.C.B. No.	C3
M, MC	SXPG1352241B	○
N	SXPG1352251B	×

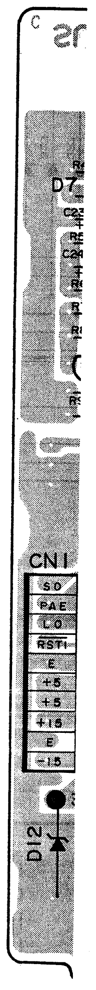

SUPG1352B
CN1
CN2
CN3
CN4
CN5
CN6
JK1 AC IN
J27
F2 T16A 250V
F4 T4A 250V
IC1
IC2
IC3
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
RL1
7(OUT)
6(IN)
C2 250V0.1
120V
240V
220V
0V

NOTES:
- FUSES

F2: XBA2C16TBO
F4: XBA2C40TBO

*P.C.B. Comparison chart by area.

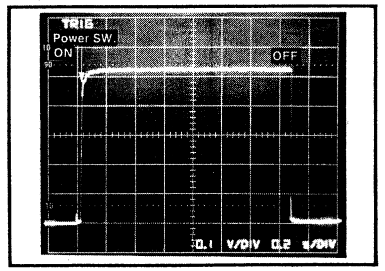
Area	P.C.B. No.	C3
EN	SXPG1352211B	×
EZ	SXPG1352261B	○



NOTES
- FUSE

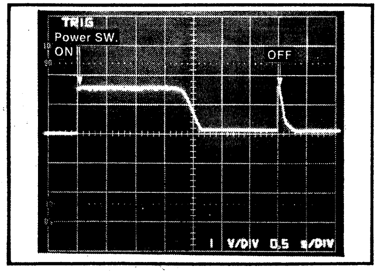
F1:
F2, 3:
F4:

❶ RST1



- Power SW...........................ON → OFF

❷



- Power SW...........................ON → OFF

❸

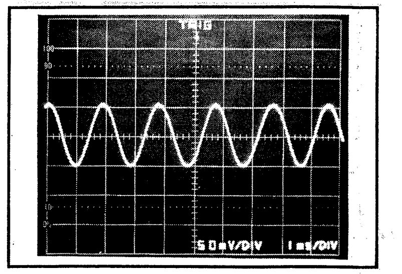
+5V

❹, ❺

❹ +15V

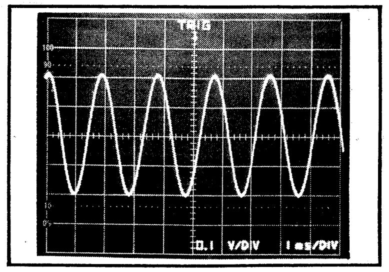
❺ −15V

❻ IN



- Upper Tab............................Flute 8'
- U. Poly Volume...................Step 4
- Main Vol. Exp.....................Max
- Upper Key............................C4

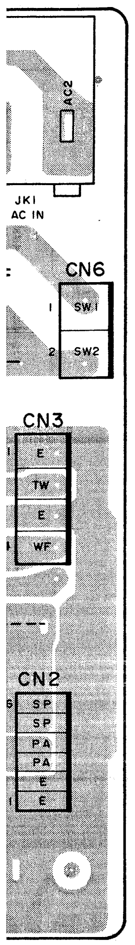
❼ OUT



- Upper Tab............................Flute 8'
- U. Poly Volume...................Step 4
- Main Vol. Exp.....................Max
- Upper Key............................C4

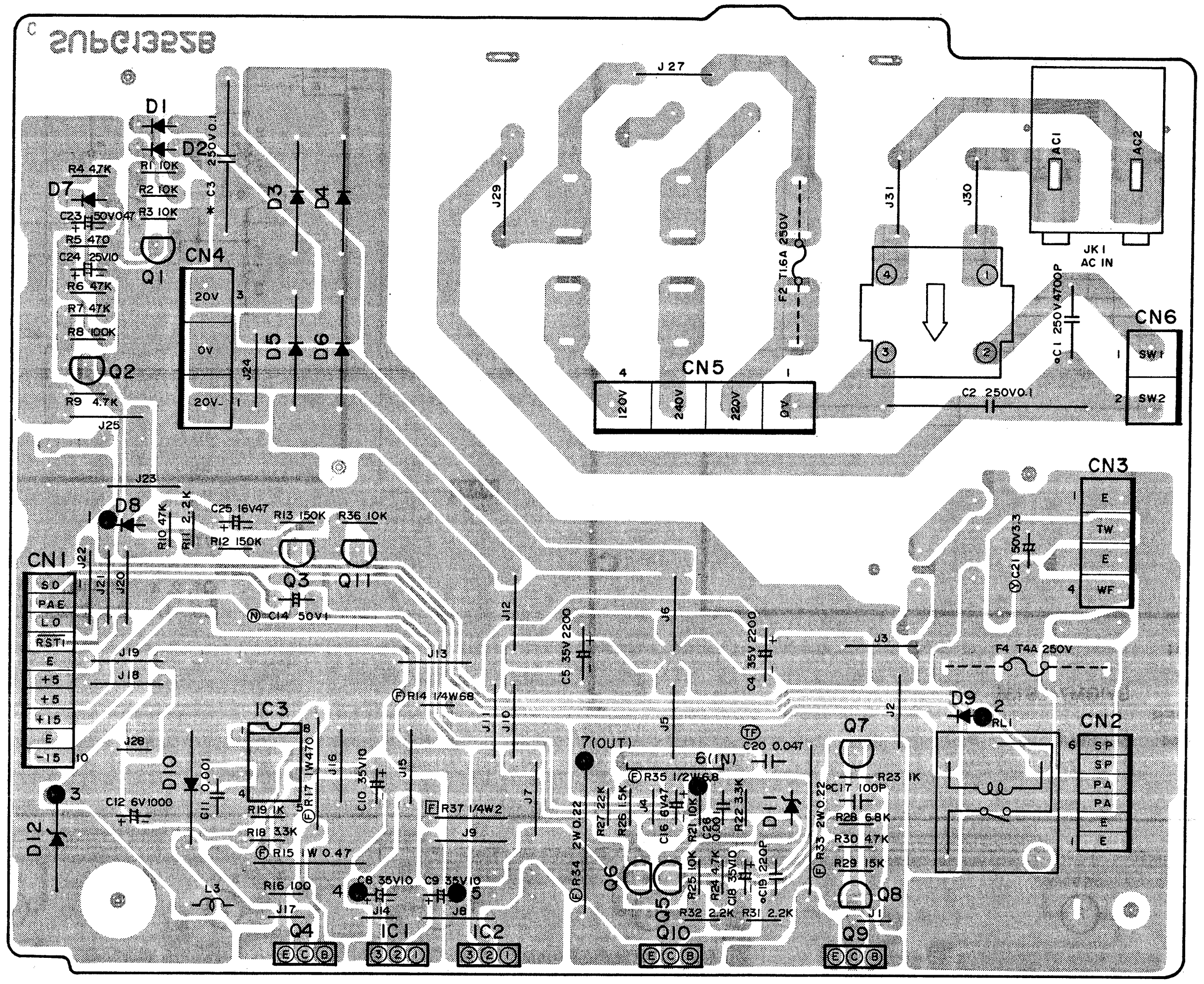
2241B

2251B


AC2
JK1
AC IN
CN6
SW1
SW2
CN3
E
TW
E
WF
CN2
SP
SP
PA
PA
E
E

■ **Products for (EN) area.** SXPG1352211B

■ **Products for (EZ) area.** SXPG1352261B


SUPG1352B
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
IC1
IC2
IC3
CN1
CN2
CN3
CN4
CN5
CN6
JK1
AC IN
AC1
AC2
F2 T1.6A 250V
F4 T4A 250V
C1 250V4700P
C2 250V0.1
C3 250V0.1
120V
240V
220V
0V
20V
0V
20V-
SW1
SW2
SO
PAE
LO
RST1
+5
+5
+15
-15
E
TW
WF
SP
PA
7(OUT)
6(IN)
RL1
J27
J29
J31
J30

NOTES:
- FUSES
  - F2: XBA2C16TBO
  - F4: XBA2C40TBO

＊P.C.B. Comparison chart by area.

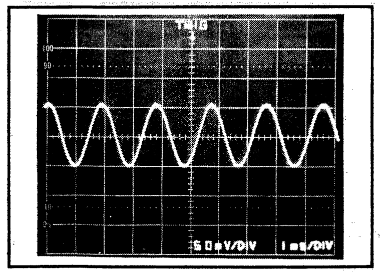
Area	P.C.B. No.	C3
EN	SXPG1352211B	×
EZ	SXPG1352261B	○

④, ⑤

④+15V

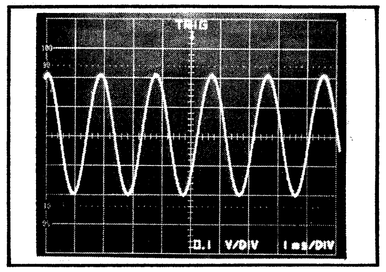
⑤−15V

⑥ IN



- Upper Tab............................Flute 8′
- U. Poly Volume...................Step 4
- Main Vol. Exp ....Max
- Upper Key............................C4

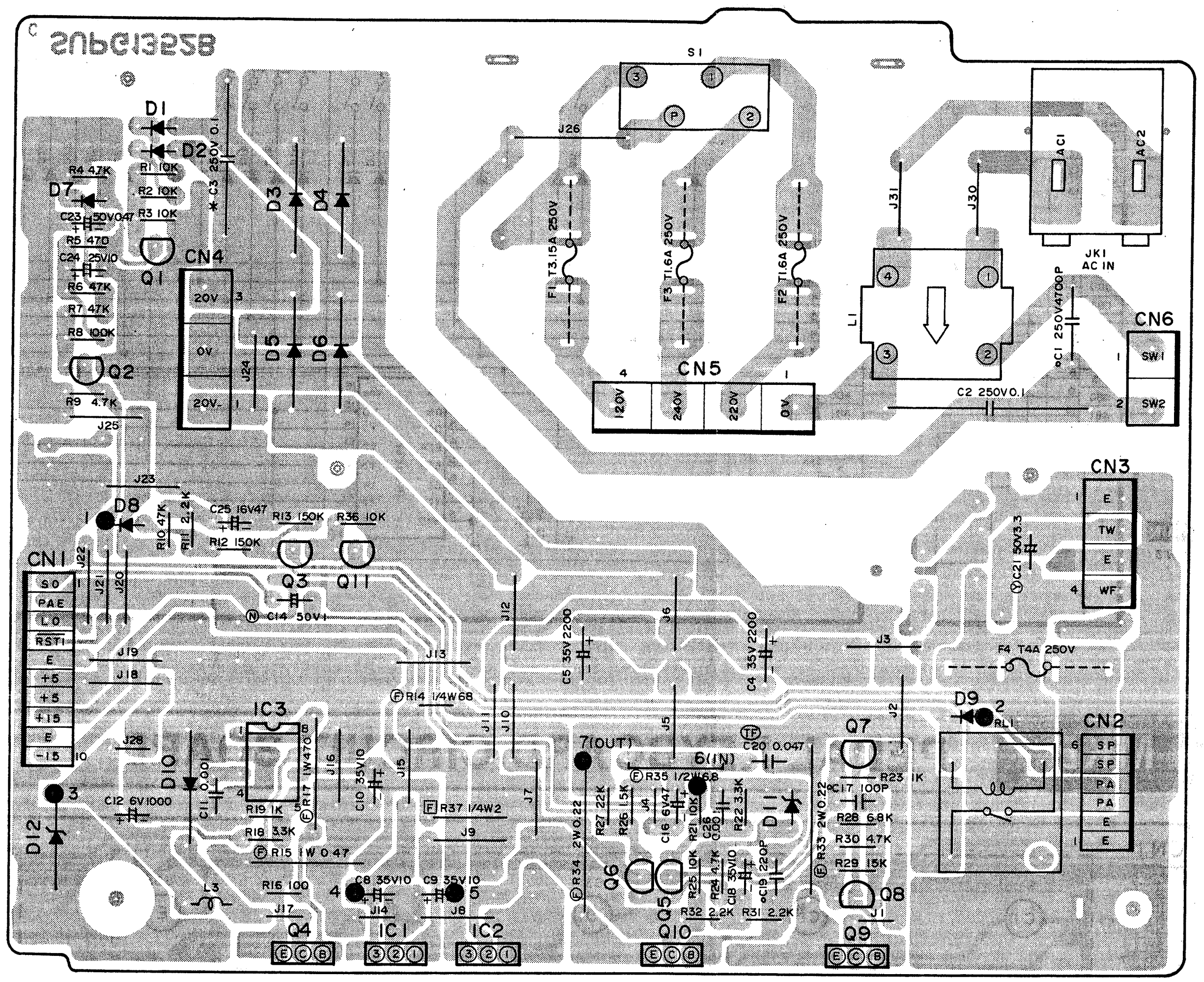
⑦ OUT



- Upper Tab............................Flute 8′
- U. Poly Volume...................Step 4
- Main Vol. Exp ....Max
- Upper Key............................C4

■ **Products for (XL) and (XR) areas.** SXPG1352231B

■ **Products for Asia and European areas except (EN) and (EZ).** SXPG1352221B


SUPG1352B
S1
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
IC1
IC2
IC3
CN1
CN2
CN3
CN4
CN5
CN6
JK1
AC IN
AC1
AC2
L1
F1 T3.15A 250V
F3 T1.6A 250V
F2 T1.6A 250V
F4 T4A 250V
C1 250V4700P
C2 250V0.1
C3 250V0.1
120V
240V
220V
0V
SW1
SW2
7(OUT)
6(IN)
RL1

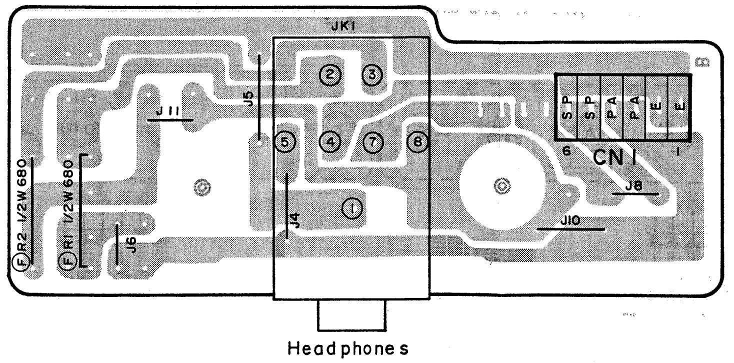
NOTES:
- FUSES
  - F1: XBA2C31TBO
  - F2, 3: XBA216TBO
  - F4: XBA2C40TBO

＊P.C.B. Comparison chart by area.

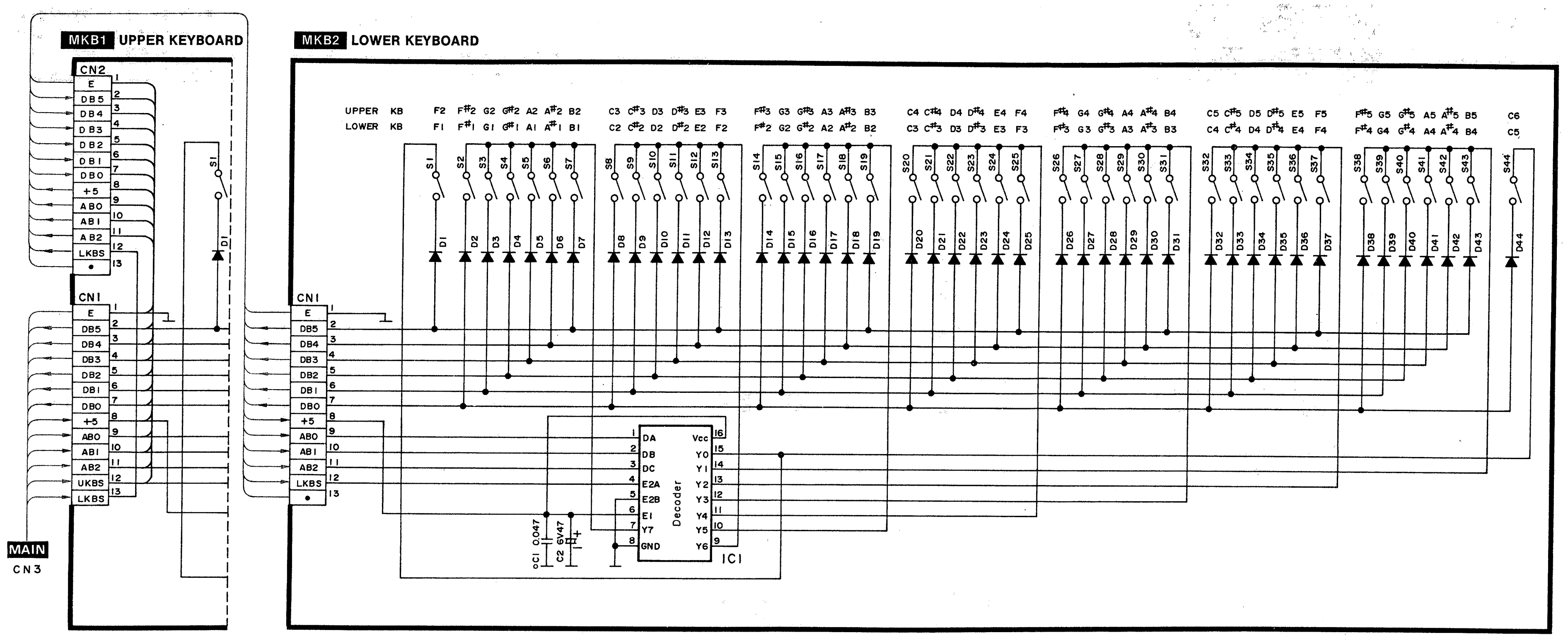
Area	P.C.B. No.	AC Inlet Cover	C3
XL, XR	SXPG1352231B	SJS9334A	○
Others	SXPG1352221B	SJS9231A	×

HP HEADPHONES CIRCUIT BOARD

SXPG135211C

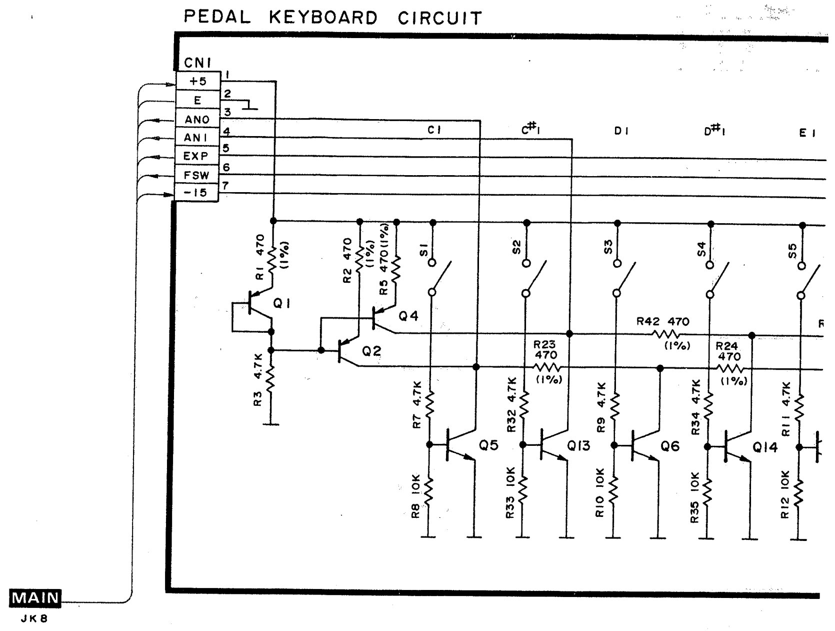

JK1
CN1
SP
SP
PA
PA
E
E
J11
J5
J4
J6
J8
J10
R1 1/2W 680
R2 1/2W 680
Headphones

MKB MANUAL KEYBOARD CIRCUIT DIAGRAM


MKB1 UPPER KEYBOARD
MKB2 LOWER KEYBOARD
CN2
CN1
E
DB5
DB4
DB3
DB2
DB1
DB0
+5
AB0
AB1
AB2
UKBS
LKBS
UPPER KB
LOWER KB
S1
D1
D44
Decoder
IC1
C1 0.047
C2 6V47
MAIN
CN3

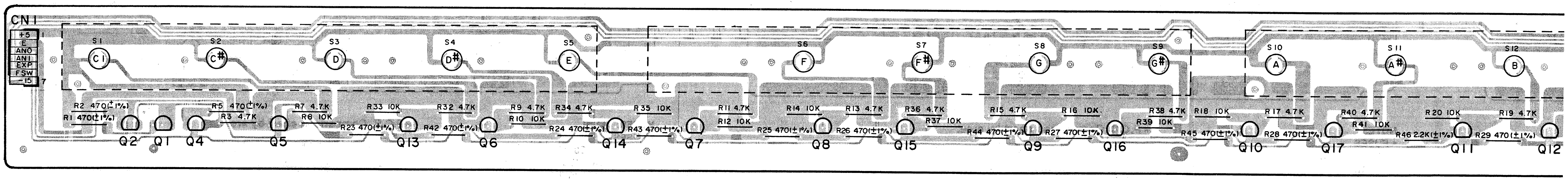
NOTES:
- IC
  IC1: SVIGM74LS138
- DIODES
  D1~44: MA162A

PKB EXP PEDAL KEYBOARD

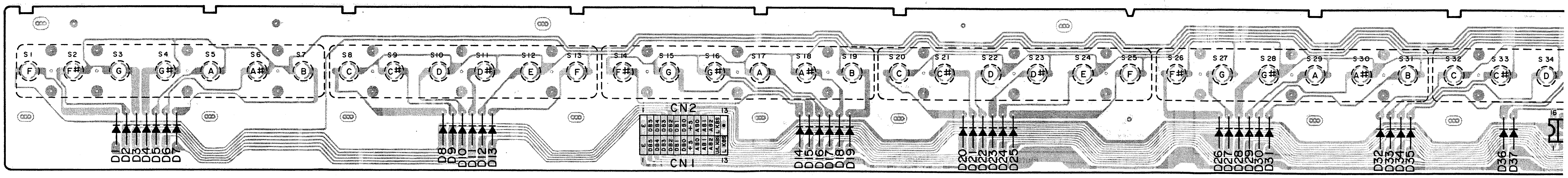

PEDAL KEYBOARD CIRCUIT
CN1
+5
E
AN0
AN1
EXP
FSW
-15
C1
C#1
D1
D#1
E1
Q1
Q2
Q4
Q5
Q13
Q6
Q14
MAIN
JK8

NOTES:
- TRANSISTOR
  Q1, 2, 4: 2SA1015-GR
  Q5~17: 2SC2320LFG

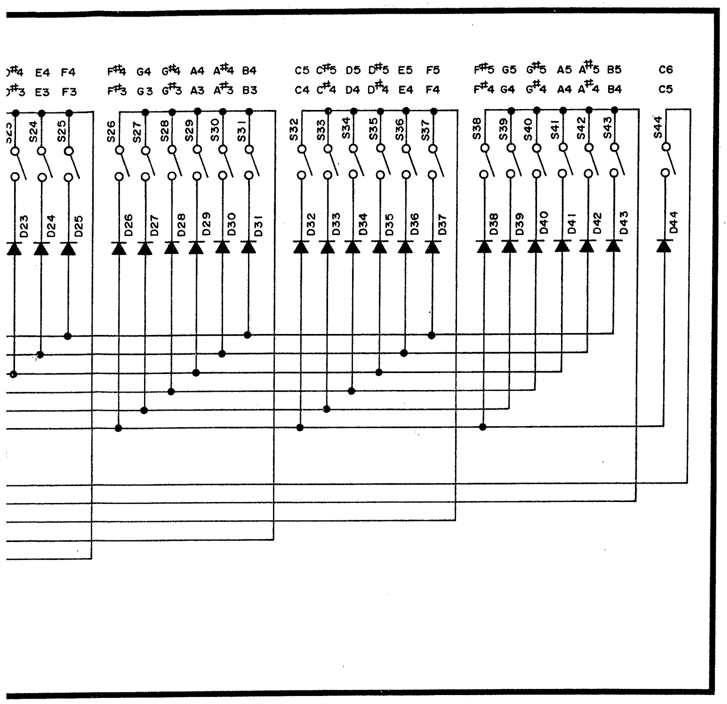
MKB PEDAL KEYBOARD CIRCUIT BOARD


CN1
+5
E
AN0
AN1
EXP
FSW
-15
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
Q2
Q1
Q4
Q5
Q13
Q6
Q14
Q7
Q8
Q15
Q9
Q16
Q10
Q17
Q11
Q12

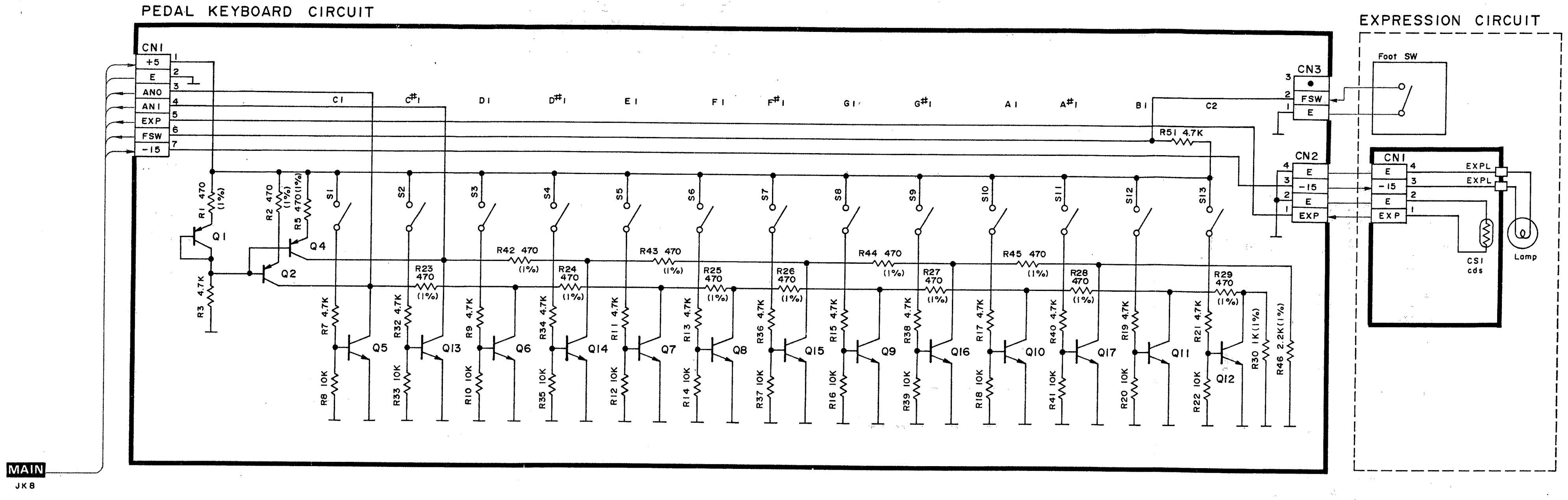
PKB MANUAL KEYBOARD CIRCUIT BOARD


CN2
CN1
S1
S34
D1
D37

PKB EXP PEDAL KEYBOARD & EXP CIRCUIT DIAGRAM

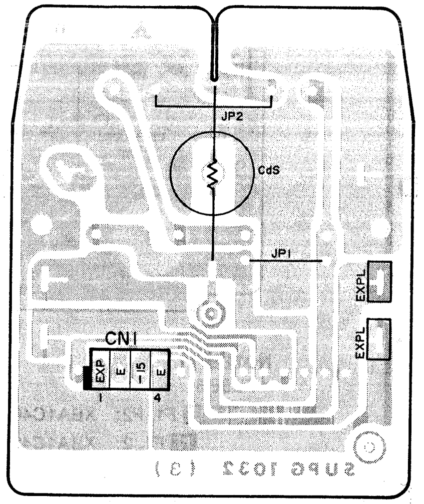

C5 C#5 D5 D#5 E5 F5
C4 C#4 D4 D#4 E4 F4
F#5 G5 G#5 A5 A#5 B5
F#4 G4 G#4 A4 A#4 B4
C6
C5
S24 S25 S26 S27 S28 S29 S30 S31 S32 S33 S34 S35 S36 S37 S38 S39 S40 S41 S42 S43 S44
D23 D24 D25 D26 D27 D28 D29 D30 D31 D32 D33 D34 D35 D36 D37 D38 D39 D40 D41 D42 D43 D44

NOTES:
- IC
  IC1: SVIGM74LS138
- DIODES
  D1~44: MA162A

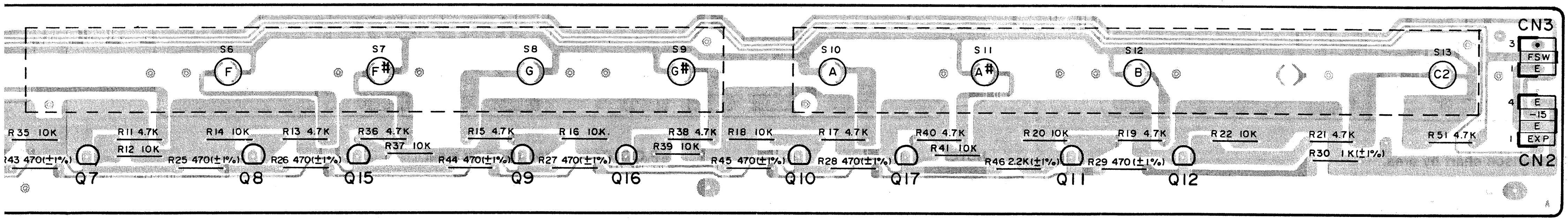

PEDAL KEYBOARD CIRCUIT
EXPRESSION CIRCUIT
CN1
+5
E
ANO
AN1
EXP
FSW
-15
MAIN
JK8
C1 C#1 D1 D#1 E1 F1 F#1 G1 G#1 A1 A#1 B1 C2
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13
Q1 Q2 Q4 Q5 Q13 Q6 Q14 Q7 Q8 Q15 Q9 Q16 Q10 Q17 Q11 Q12
R1 470 (1%)
R2 470 (1%)
R5 470 (1%)
R3 4.7K
R51 4.7K
R42 470 (1%)
R43 470 (1%)
R44 470 (1%)
R45 470 (1%)
R23 470 (1%)
R24 470 (1%)
R25 470 (1%)
R26 470 (1%)
R27 470 (1%)
R28 470 (1%)
R29 470 (1%)
R30 1K (1%)
R46 2.2K (1%)
CN2
CN3
FSW
E
-15
EXP
Foot SW
EXPL
CS1
cds
Lamp

NOTES:
- TRANSISTOR
  Q1, 2, 4: 2SA1015-GR
  Q5~17: 2SC2320LFG

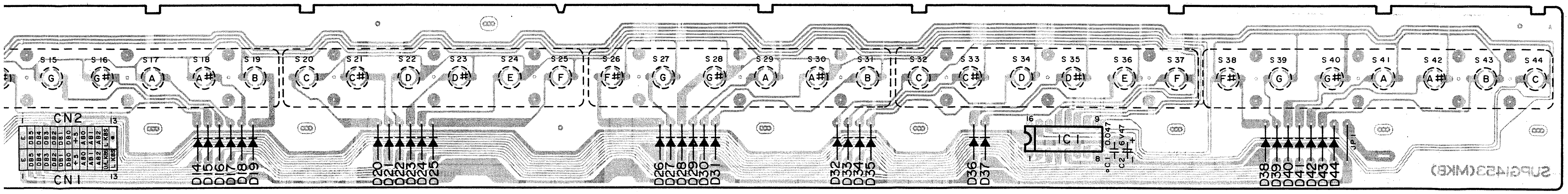
EXP P.C.B. **SXPG103211**


JP2
Cds
JP1
CN1
EXP
E
-15
E
EXPL
EXPL
SUPG 1032 (3)

SXPG145111


CN3
FSW
E
-15
EXP
CN2
S6 S7 S8 S9 S10 S11 S12 S13
F F# G G# A A# B C2
R35 10K R11 4.7K R12 10K R14 10K R13 4.7K R36 4.7K R37 10K R15 4.7K R16 10K R38 4.7K R39 10K R18 10K R17 4.7K R40 4.7K R41 10K R20 10K R19 4.7K R22 10K R21 4.7K R30 1K(±1%) R51 4.7K
R43 470(±1%) R25 470(±1%) R26 470(±1%) R44 470(±1%) R27 470(±1%) R45 470(±1%) R28 470(±1%) R46 2.2K(±1%) R29 470(±1%)
Q7 Q8 Q15 Q9 Q16 Q10 Q17 Q11 Q12

SXPG145311


S15 S16 S17 S18 S19 S20 S21 S22 S23 S24 S25 S26 S27 S28 S29 S30 S31 S32 S33 S34 S35 S36 S37 S38 S39 S40 S41 S42 S43 S44
G G# A A# B C C# D D# E F F# G G# A A# B C C# D D# E F F# G G# A A# B C
CN2
CN1
IC1
C1 0.047
C2 47 6V
JP1
D14 D15 D16 D17 D18 D19 D20 D21 D22 D23 D24 D25 D26 D27 D28 D29 D30 D31 D32 D33 D34 D35 D36 D37 D38 D39 D40 D41 D42 D43 D44
SUPG1453(MKB)

	Ref. No.	Part No.	Description	Per/Set
			RESISTORS	
	R1~12	ERDS2TJ221	220Ω	12
	R14	ERDS2TJ332	3.3KΩ	1
	R15	ERDS2TJ103	10KΩ	1
	R16	ERDS2TJ184	180KΩ	1
	R18	ERDS2TJ472	4.7KΩ	1
	R19	ERDS2TJ104	100KΩ	1
	R20	ERDS2TJ103	10KΩ	1
	R21, 22	ERDS2TJ472	4.7KΩ	2
			CAPACITORS	
	C1, 3~5	ECRR1H104ZF	0.1μF	4
	C2	ECEA0JK470	47μF, 6.3V	1

AS AMP & POWER SUPPLY CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
			INTEGRATED CIRCUITS	
	IC1	SVIGM5F7815	Voltage Regulator	1
	IC2	SVIGM5F7915	Voltage Regulator	1
	IC3	SVIGM5291P	Switching Regulator	1
			TRANSISTORS	
S	Q1~3, 5, 6, 11	2SC2320LFG	2SC1310FG (SUB. Part)	6
	Q4	2SB953A		1
	Q7	2SA1123S		1
	Q8	2SC1815GR		1
	Q9	2SD1277A		1
	Q10	2SB951A		1
			DIODES	
	D1, 2 ⚠	SVDGERA1502Y	Rectifier	2
	D3~6 ⚠	SVDGS3V20-15	Rectifier	4
	D7~9	MA165TA5		3
	D10	SVDGRK14S		1
	D11	MA4062	Zener, 6.2V	1
	D12	MA2062LF	Zener, 6.2V	1
			COIL & LINE FILTER	
	L1 ⚠	SLTGLF3	Line Filter	1
	L3	SLCG1A121T	Coil	1
			JACK	
	JK1 ⚠	SJVD0203B	AC Inlet	1
			SWITCH	
	S1 ⚠	SSRG100A	Voltage Selector, Except for [EN][EZ][M][MC] areas	1
			RELAY	
	RL1	SSYGMR30112	Relay	1

	Ref. No.	Part No.	Description	Per/Set
			FUSES	
	F1, 2 M MC ⚠	XBA1C40NU100	4A, 125V, [M][MC] areas only	2
	F2 EN EZ ⚠	XBA2C16TB0	T1.6A, 250V } [EN][EZ] areas only	1
	F4 EN EZ ⚠	XBA2C40TB0	T4A, 250V } [EN][EZ] areas only	1
	F1 ⚠	XBA2C31TB0	T3.15A, 250V } others	1
	F2, 3 ⚠	XBA2C16TB0	T1.6A, 250V } others	2
	F4 ⚠	XBA2C40TB0	T4A, 250V } others	1
			AC INLET COVER	
	XL XR ⚠	SJS9334A	AC Inlet Cover, [XL][XR] areas	1
	⚠	SJS9231A	AC Inlet Cover, other areas	1
			RESISTORS	
	R1~3	ERDS2TJ103	10KΩ	3
	R4	ERDS2TJ472	4.7KΩ	1
	R5	ERDS2TJ471	470Ω	1
	R6, 7	ERDS2TJ473	47KΩ	2
	R8	ERDS2TJ104	100KΩ	1
	R9	ERDS2TJ472	4.7KΩ	1
	R10	ERDS2TJ473	47KΩ	1
	R11	ERDS2TJ222	2.2KΩ	1
	R12, 13	ERDS2TJ154	150KΩ	2
	R14 ⚠	ERD25FVJ680	68Ω, 1/4W, Flame-Proof	1
	R15 ⚠	ERX1ANJPR47S	0.47Ω, 1W, Flame-Proof	1
	R16	ERDS2TJ101	100Ω	1
	R17	ERG1ANJP471S	470Ω, 1W, Flame-Proof	1
	R18	ERDS2TJ332	3.3KΩ	1
	R19	ERDS2TJ102	1KΩ	1
	R21	ERDS2TJ103	10KΩ	1
	R22	ERDS2TJ332	3.3KΩ	1
	R23	ERDS2TJ102	1KΩ	1
	R24	ERDS2TJ472	4.7KΩ	1
	R25	ERDS2TJ103	10KΩ	1
	R26	ERDS2TJ152	1.5KΩ	1
	R27	ERDS2TJ223	22KΩ	1
	R28	ERDS2TJ682	6.8KΩ	1
	R29	ERDS2TJ153	15KΩ	1
	R30	ERDS2TJ472	4.7KΩ	1
	R31, 32	ERDS2TJ222	2.2KΩ	2
	R33, 34 ⚠	ERX2ANJPR22S	0.22Ω, 2W, Flame-Proof	2
	R35 ⚠	ERD50FJ6R8	6.8Ω, 1/2W, Flame-Proof	1
	R36	ERDS2TJ103	10KΩ	1
	R37 ⚠	ERQ14AJ2R0P	2Ω, 1/4W, Fuse Type	1
			CAPACITORS	
	C1 ⚠	ECKCVA1472MF	4700pF, 250V, Line-Capacitor	1
	C2 ⚠	ECQU2A104MN	0.1μF, 250V, Across-the Line-Capacitor	1
	C3 M MC EZ XL XR ⚠	ECQE2A104MW	0.1μF, 250V, [M][MC][EZ][XL][XR] areas	1
	C4, 5	ECEA1VU222	2200μF, 35V	2
	C8~10	ECEA1VU100	10μF, 35V	3
	C11	ECQG1H102KZ	0.001μF	1
	C12	ECEA0JU102	1000μF, 6.3V	1
	C14	ECEA1HN010S	1μF, 50V	1
	C16	ECEA0JU470	47μF, 6.3V	1
	C17	ECCR1H101J	100pF	1
	C18	ECEA1VU100	10μF, 35V	1
	C19	ECCR1H221J	220pF	1
	C20	ECQV1H473JZ	0.047μF	1
	C21	ECEA50Y3R3	3.3μF, 50V	1

	Ref. No.	Part No.	Description	Per/Set
	C23	ECEA1HUR47	0.47μF, 50V	1
	C24	ECEA1EU100	10μF, 25V	1
	C25	ECEA1CU470	47μF, 16V	1
	C26	ECQG1H102KZ	0.001μF	1

HP HEADPHONES CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
			JACK	
	JK1	SJJG100A	Jack	1
			RESISTORS	
	R1, 2 ⚠	ERD50FJ681	680Ω, 1/2W, Flame-Proof	2

MKB MANUAL KEYBOARD CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
			INTEGRATED CIRCUIT	
	IC1	SVIGM74LS138	Decoder	1
			DIODES	
S	D1~44	MA162A	MA150IR (SUB. Part)	44
			SWITCHES	
	S1~7, 38~44	SSPG7001A	Rubber Switch (7pcs. on one)	2
	S8~37	SSPG6001A	Rubber Switch (6pcs. on one)	5
			CAPACITORS	
	C1	ECKR1E473ZV	0.047μF	1
	C2	ECEA0JK470	47μF, 6.3V	1

PKB PEDAL KEYBOARD CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
			TRANSISTORS	
S	Q1, 2, 4	2SA1015-GR	2SA933STRS (SUB. Part)	3
S	Q5~17	2SC2320LFG	2SC1310FG (SUB. Part)	13
			SWITCHES	
	S1~13	SHGG50A	Rubber Switch (5pcs. on one)	3
			RESISTORS	
	R1, 2	ER0S2CKF4700	470Ω, ±1%	2
	R3	ERDS2TJ472	4.7KΩ	1
	R5	ER0S2CKF4700	470Ω, ±1%	1

	Ref. No.	Part No.	Description	Per/Set
	R7	ERDS2TJ472	4.7KΩ	1
	R8	ERDS2TJ103	10KΩ	1
	R9	ERDS2TJ472	4.7KΩ	1
	R10	ERDS2TJ103	10KΩ	1
	R11	ERDS2TJ472	4.7KΩ	1
	R12	ERDS2TJ103	10KΩ	1
	R13	ERDS2TJ472	4.7KΩ	1
	R14	ERDS2TJ103	10KΩ	1
	R15	ERDS2TJ472	4.7KΩ	1
	R16	ERDS2TJ103	10KΩ	1
	R17	ERDS2TJ472	4.7KΩ	1
	R18	ERDS2TJ103	10KΩ	1
	R19	ERDS2TJ472	4.7KΩ	1
	R20	ERDS2TJ103	10KΩ	1
	R21	ERDS2TJ472	4.7KΩ	1
	R22	ERDS2TJ103	10KΩ	1
	R23~29	ER0S2CKF4700	470Ω, ±1%	7
	R30	ER0S2CKF1001	1KΩ, ±1%	1
	R32	ERDS2TJ472	4.7KΩ	1
	R33	ERDS2TJ103	10KΩ	1
	R34	ERDS2TJ472	4.7KΩ	1
	R35	ERDS2TJ103	10KΩ	1
	R36	ERDS2TJ472	4.7KΩ	1
	R37	ERDS2TJ103	10KΩ	1
	R38	ERDS2TJ472	4.7KΩ	1
	R39	ERDS2TJ103	10KΩ	1
	R40	ERDS2TJ472	4.7KΩ	1
	R41	ERDS2TJ103	10KΩ	1
	R42~45	ER0S2CKF4700	470Ω, ±1%	4
	R46	ER0S2CKF2201	2.2KΩ, ±1%	1
	R51	ERDS2TJ472	4.7KΩ	1

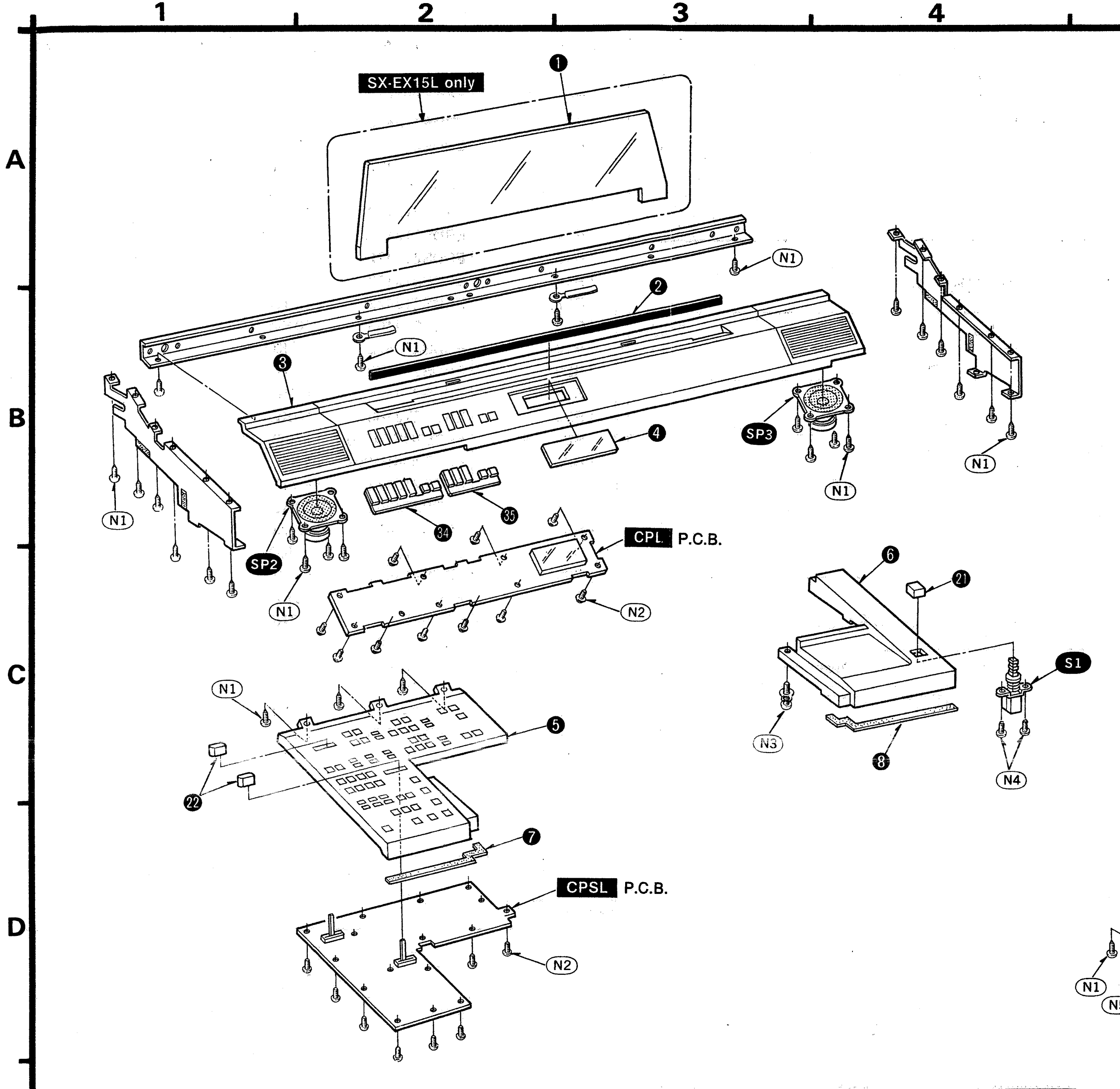
EXP EXP CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
			CDS	
	CS1	SVEG5	Light Sensitive Device	1

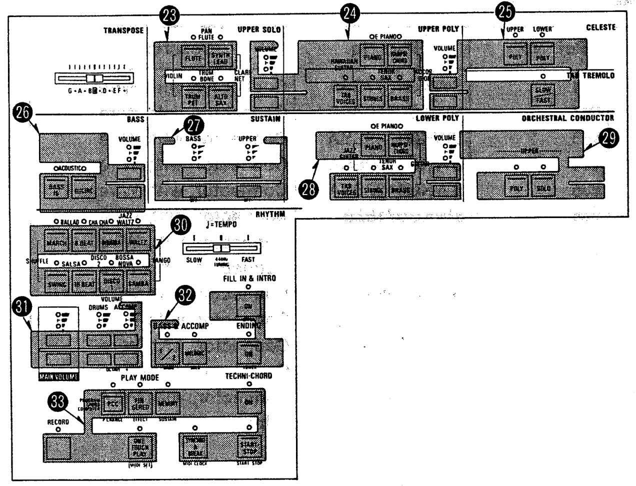
■ WIRING PARTS

	Ref. No.	Part No.	Description	Per/Set
	W1	SWKG1077SSA	Connector, with Wire	1
	W2	SWKG0876SSB	Connector, with Wire	1
○	W3	SWKG1349SSA	Connector, with Wire	1
○	W4	SWKG1350SSA	Connector, with Wire	1
○	W5	SWKG1422SSA	Connector, with Wire	1
○	W6	SWKG0715ZB	Connector, with Wire	1
	W7	SWKG0326LTA	Connector, with Wire	1
○	W8	SWKG04158LSA	Connector, with Wire	1
○	W9	SWKG1088LSA	Connector, with Wire	1
○	W10	SWKG04162ZC	Connector, with Wire	1
○	W11	SWKG06134LSA	Connector, with Wire	1
○	W12	SWKG03124ZA	Connector, with Wire	1
○	W13	SWKG0247ZB	Connector, with Wire	1
○	W14	SWKG0111ZA	Wire	1

EXPLODED VIEWS OF CABINET


1
2
3
4
5
A
B
C
D
SX-EX15L only
❶
❷
❸
❹
N1
SP2
SP3
㉞
㉟
CPL P.C.B.
N2
❺
❻
㉑
S1
N3
❽
N4
㉒
❼
CPSL P.C.B.

■SIDE CONTROL PANEL BUTTONS


E
F
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㉕
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㉗
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㉚
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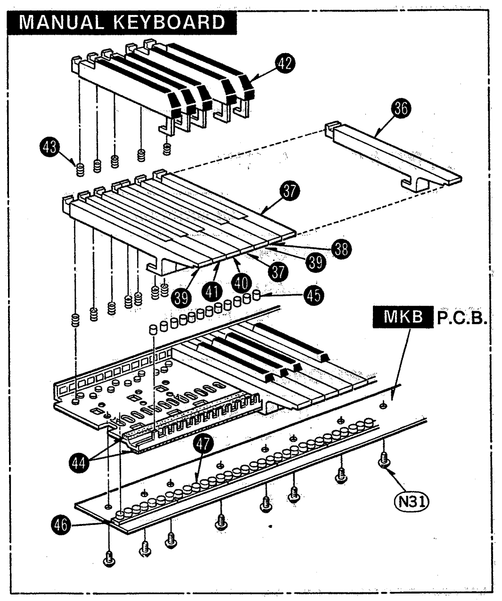
㉜
㉝
TRANSPOSE
G・A・B♭・B・C・D・E・F
PAN FLUTE
UPPER SOLO
FLUTE
SYNTH LEAD
VIOLIN
TROM BONE
CLARI NET
TRUM PET
ALTO SAX
VOLUME
UPPER POLY
E PIANO
HAWAIIAN GUITAR
PIANO
HARPSI CHORD
TENOR SAX
TAB VOICES
STRINGS
BRASS
UPPER
LOWER
CELESTE
POLY
TAB TREMOLO
SLOW FAST
BASS
ACOUSTIC
BASS
ELECTRIC
SUSTAIN
LOWER POLY
JAZZ GUITAR
ORCHESTRAL CONDUCTOR
SOLO
RHYTHM
BALLAD
CHA CHA
JAZZ WALTZ
MARCH
8 BEAT
RUMBA
WALTZ
SHUFFLE
SALSA
DISCO 2
BOSSA NOVA
TANGO
SWING
16 BEAT
DISCO 1
SAMBA
♩=TEMPO
SLOW
440Hz TUNING
FAST
FILL IN & INTRO
ON
VOLUME
DRUMS
ACCOMP
BASS & ACCOMP
ENDING
MEMORY
MAIN VOLUME
PLAY MODE
TECHNI-CHORD
PROGRAM CHORD COMPUTER
PCC
FIN GERED
RECORD
ONE TOUCH PLAY
SYNCHRO & BREAK
START STOP


MANUAL KEYBOARD
㊷
㊸
㊱
㊲
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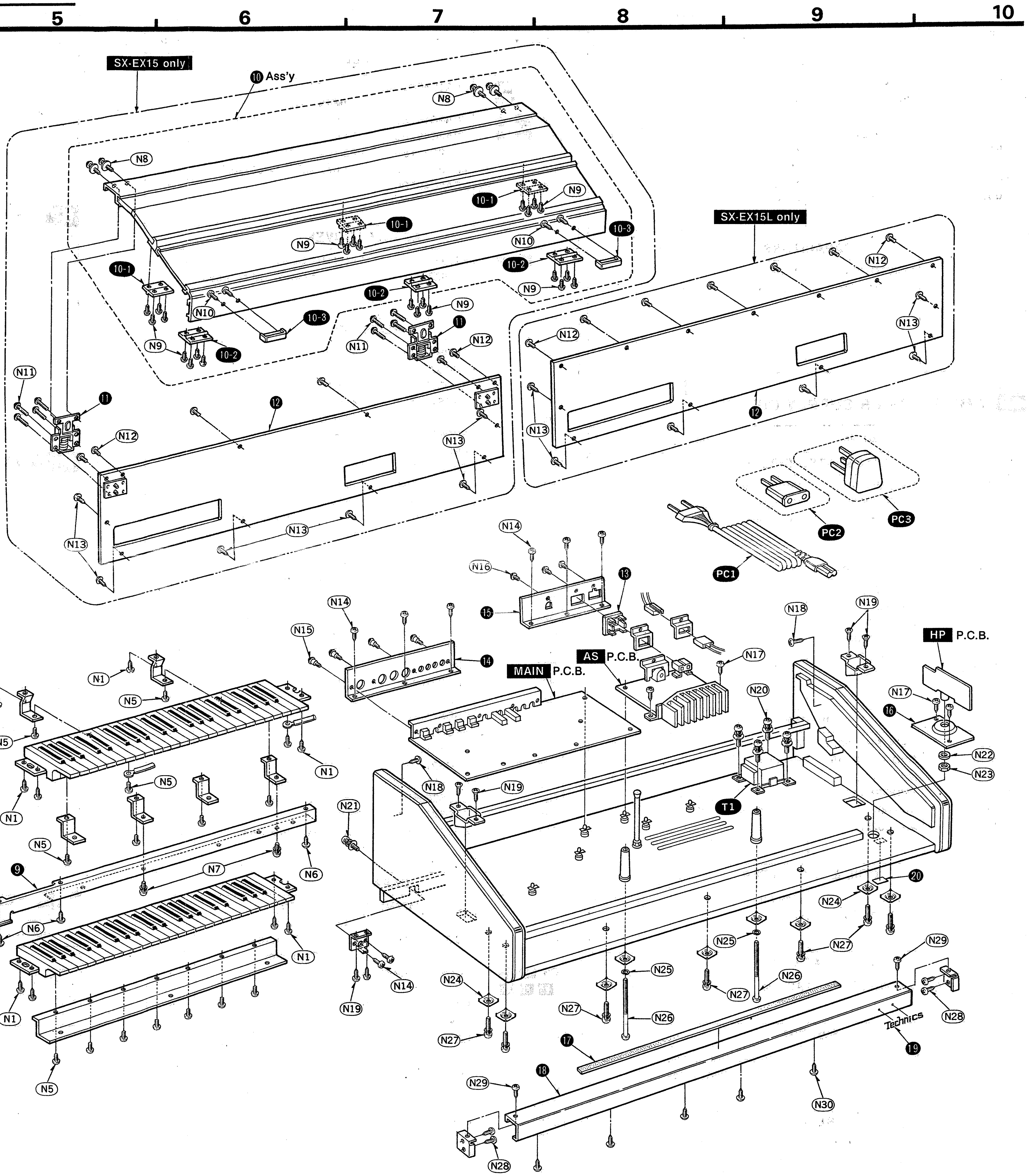
㊶
㊺
MKB P.C.B.
㊹
㊼
㊻
N31


6
7
8
9
10
SX-EX15 only
❿ Ass'y
N8
N9
10-1
10-2
10-3
N10
⓫
N11
⓬
N12
N13
SX-EX15L only
PC1
PC2
PC3
N14
N16
⓭
⓯
N15
⓮
MAIN P.C.B.
AS P.C.B.
N17
N18
N19
HP P.C.B.
⓰
N22
N23
N20
T1
N21
N1
N5
❾
N6
N7
⓴
N24
N25
N26
N27
N29
N28
⓱
⓲
⓳
Technics
N30

REPLACEMENT PARTS LIST......P.C.B. and Wiring Parts

Notes:

1. Printed circuit board assembly with mark (NLA) is no longer available after production discontinuation of the complete set.
2. The MAIN P.C.B. part number is service standard parts and may differ from production parts. (Except [M] area)
3. The "S" mark is service standard parts and may differ from production parts.
4. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
5. ○ mark are new parts.
6. For part No. with area mark, check the area when placing an order.

■ PRINTED CIRCUIT BOARD

	NLA	Area	Part No.	Description	Per/Set
○	NLA	M	SXPG144661	MAIN [M] area only	1
Ⓢ	NLA		SXPG144671	MAIN other areas	1
○	NLA		SXPG1352121A	CPSL	1
○	NLA		SXPG144921	CPL	1
○	NLA	M MC	SXPG1352241B	AS	1
○	NLA	EZ	SXPG1352261B	AS	1
○	NLA	XL XR	SXPG1352231B	AS	1
○	NLA	EN EL	SXPG1352211B	AS	1
○	NLA		SXPG1352221B	AS other areas	1
	NLA		SXPG135211C	HP	1
○	NLA		SXPG145311	MKB	2
○	NLA		SXPG145111	PKB	1
	NLA		SXPG103211	EXP	1

MAIN MAIN CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
	INTEGRATED CIRCUITS			
	IC1	SVIG7810HCW	1 chip 8 bit Microcomputer	1
	IC2	SVIGM6050211	Gate Array	1
○	IC3	SVIG5EX15AX1	512K bit EP ROM	1
	IC4	SVIGD446415L	64K bit SRAM	1
	IC6	SVIGM74LS05	Hex Inverters (O.C.)	1
	IC7	SVIGTLP513	Photo Coupler	1
	IC10, 11, 21~23, 34, 36, 39, 42, 44, 45, 53, 68, 70	SVIGM5218L	Operational Amplifier	14
	IC12, 14	MN6635	Tone Generator LSI	2
○	IC13	SVIGU3C04615	4M bit Mask ROM	1
	IC15, 16	SVIGBA9221	12 bit D-A Converter	2
	IC17, 18	SVIGM5238L	Operational Amplifier	2
	IC19, 20	SVIGTC4051BP	8-channel Multiplexer	2
	IC24~31	MN74HC4066	Quad Bilateral Switches	8
	IC41	SVIGM5241L	Dual VCA	1
	IC46	SVIGUPD4066B	Bilateral Switch	1
	IC47~49	SVIGMSM4011	2-input NAND Gate	3
	IC50~52	MN3006	BBD (128 stages)	3
	TRANSISTORS			
S	Q1~3	2SC2320LFG	2SC1310FG (SUB. Part)	3
	Q5, 10, 11, 13	2SJ105GR	FET	4
S	Q8, 9	2SA1015-GR	2SA933STRS (SUB. Part)	2
	DIODES			
	D1~19	MA165TA5	Diode	19

	Ref. No.	Part No.	Description	Per/Set
	OSCILLATORS			
	X1	SVQG49S1500T	15MHz, Quartz Oscillator	1
	X2	EF0FC4004A3	4MHz, Ceramic Oscillator	1
	X3	SVQG49S1600T	16MHz, Quartz Oscillator	1
	COMPONENT COMBINATIONS			
	Z2	EXBP88472JM	4.7KΩ×8	1
	Z3, 4	EXKS14Z2073	1KΩ/2KΩ, Ladder Network	2
	COILS			
	L3~5, M MC 11~13 EZ XL	SLQG15W34DPQ	Coil, [M][MC][EZ][XL] areas	6
	JACKS			
	JK1~3	SJSG1370A	MIDI (IN, OUT, THRU)	3
	JK5, 7	SJJG400A	LINE OUT, AUX IN	2
	JK8	SJSG1390A	PEDAL IN	1
	SEMI-FIXED RESISTOR			
	VR1	EVSG0E1B223A	22KΩ B, BBD Bias Adj.	1
	RESISTORS			
	R1, 2	ERDS2TJ472	4.7KΩ	2
	R3	ERDS2TJ471	470Ω	1
	R4	ERDS2TJ332	3.3KΩ	1
	R5	ERDS2TJ681	680Ω	1
	R6	ERDS2TJ330	33Ω	1
	R7	ERDS2TJ102	1KΩ	1
	R8	ERDS2TJ330	33Ω	1
	R9	ERDS2TJ333	33KΩ	1
	R10	ERDS2TJ472	4.7KΩ	1
	R11	ERDS2TJ473	47KΩ	1
	R14	ERDS2TJ472	4.7KΩ	1
	R15	ERDS2TJ101	100Ω	1
	R16	ERDS2TJ184	180KΩ	1
	R17	ERDS2TJ101	100Ω	1
	R18 ⚠	ERD2FCJ4R7	4.7Ω, 1/4W, Fuse Type	1
	R19	ERDS2TJ223	22KΩ	1
	R21	ERDS2TJ223	22KΩ	1
	R23, 24	ERDS2TJ472	4.7KΩ	2
	R27	ERDS2TJ221	220Ω	1
	R28~30	ERDS2TJ101	100Ω	3
	R31	ERDS2TJ334	330KΩ } [M][MC][EZ][XL]	1
	R32	ERDS2TJ103	10KΩ } areas only	1
	R33	ERDS2TJ101	100Ω	1
	R34	ERDS2TJ334	330KΩ } [M][MC][EZ][XL]	1
	R35	ERDS2TJ103	10KΩ } areas only	1
	R37~39	ERDS2TJ105	1MΩ	3
	R40	ERDS2TJ472	4.7KΩ	1
	R41	ERDS2TJ333	33KΩ	1
	R42	ERDS2TJ222	2.2KΩ	1
	R43	ERDS2TJ103	10KΩ	1

Ref. No.	Part No.	Description	Per/Set
R44	ERDS2TJ184	180 KΩ	1
R45	ERDS2TJ474	470 KΩ	1
R46	ERDS2TJ124	120 KΩ	1
R47	ERDS2TJ184	180 KΩ	1
R48	ERDS2TJ124	120 KΩ	1
R58	ERDS2TJ105	1 MΩ	1
R59, 60	ERDS2TJ124	120 KΩ	2
R61, 62	ERDS2TJ471	470Ω	2
R63	ER0S2TKF4700	470Ω, ±1%	1
R64, 65	ERDS2TJ471	470Ω	2
R66	ERDS2TJ123	12 KΩ	1
R67	ER0S2TKF4700	470Ω, ±1%	1
R68, 69	ERDS2TJ473	47 KΩ	2
R73	ERDS2TJ473	47 KΩ	1
R77	ERDS2TJ473	47 KΩ	1
R81	ERDS2TJ473	47 KΩ	1
R85	ERDS2TJ473	47 KΩ	1
R89	ERDS2TJ473	47 KΩ	1
R93	ERDS2TJ473	47 KΩ	1
R97	ERDS2TJ473	47 KΩ	1
R101	ERDS2TJ473	47 KΩ	1
R102	ERDS2TJ154	150 KΩ	1
R103	ERDS2TJ224	220 KΩ	1
R104	ERDS2TJ683	68 KΩ	1
R105	ERDS2TJ184	180 KΩ	1
R109	ERDS2TJ473	47 KΩ	1
R113	ERDS2TJ473	47 KΩ	1
R117	ERDS2TJ473	47 KΩ	1
R121	ERDS2TJ473	47 KΩ	1
R125	ERDS2TJ473	47 KΩ	1
R129	ERDS2TJ473	47 KΩ	1
R133	ERDS2TJ473	47 KΩ	1
R136 ⚠	ERD2FCG220	22Ω, 1/4W, Fuse Type	1
R137	ERDS2TJ473	47 KΩ	1
R138, 139	ERDS2TJ683	68 KΩ	2
R140, 141	ER0S2TKF4700	470Ω, ±1%	2
R142, 143	ERDS2TJ471	470Ω	2
R148	ERDS2TJ223	22 KΩ	1
R149	ERDS2TJ103	10 KΩ	1
R150	ERDS2TJ223	22 KΩ	1
R151	ERDS2TJ103	10 KΩ	1
R152	ERDS2TJ223	22 KΩ	1
R153	ERDS2TJ103	10 KΩ	1
R155～158	ERDS2TJ223	22 KΩ	4
R160	ERDS2TJ473	47 KΩ	1
R169	ERDS2TJ472	4.7 KΩ	1
R170～172	ERDS2TJ473	47 KΩ	3
R177	ERDS2TJ472	4.7 KΩ	1
R178～180	ERDS2TJ473	47 KΩ	3
R181	ERDS2TJ472	4.7 KΩ	1
R182～184	ERDS2TJ473	47 KΩ	3
R185, 186	ERDS2TJ682	6.8 KΩ	2
R187～189	ERDS2TJ473	47 KΩ	3
R190	ERDS2TJ105	1 MΩ	1
R197	ERDS2TJ682	6.8 KΩ	1
R198	ERDS2TJ474	470 KΩ	1
R199	ERDS2TJ104	100 KΩ	1
R200	ERDS2TJ332	3.3 KΩ	1
R201	ERDS2TJ474	470 KΩ	1
R202	ERDS2TJ104	100 KΩ	1
R203	ERDS2TJ222	2.2 KΩ	1
R204	ERDS2TJ223	22 KΩ	1
R205, 206	ERDS2TJ103	10 KΩ	2
R215～220	ERDS2TJ474	470 KΩ	6
R221, 222	ERDS2TJ223	22 KΩ	2
R223	ERDS2TJ473	47 KΩ	1
R224	ERDS2TJ184	180 KΩ	1
R225	ERDS2TJ332	3.3 KΩ	1
R226	ERDS2TJ153	15 KΩ	1
R227	ERDS2TJ103	10 KΩ	1
R228	ERDS2TJ153	15 KΩ	1
R229	ERDS2TJ223	22 KΩ	1
R230	ERDS2TJ332	3.3 KΩ	1
R231	ERDS2TJ184	180 KΩ	1
R232	ERDS2TJ153	15 KΩ	1
R233	ERDS2TJ103	10 KΩ	1
R234, 235	ERDS2TJ153	15 KΩ	2
R236	ERDS2TJ223	22 KΩ	1
R237	ERDS2TJ153	15 KΩ	1
R239, 240	ERDS2TJ153	15 KΩ	2
R241	ERDS2TJ223	22 KΩ	1
R242	ERDS2TJ184	180 KΩ	1
R243, 244	ERDS2TJ332	3.3 KΩ	2
R245, 246	ERDS2TJ184	180 KΩ	2
R247, 248	ERDS2TJ332	3.3 KΩ	2
R249	ERDS2TJ184	180 KΩ	1
R255	ERDS2TJ104	100 KΩ	1
R256	ERDS2TJ682	6.8 KΩ	1
R257	ERDS2TJ154	150 KΩ	1
R269	ERDS2TJ473	47 KΩ	1
R270	ERDS2TJ153	15 KΩ	1
R272	ERDS2TJ152	1.5 KΩ	1
R273	ERDS2TJ184	180 KΩ	1
R277	ERDS2TJ471	470Ω	1
R278	ERDS2TJ101	100Ω	1
R279	ERDS2TJ333	33 KΩ	1
R283	ERDS2TJ153	15 KΩ	1
R284	ERDS2TJ683	68 KΩ	1
R285	ERDS2TJ153	15 KΩ	1
R286	ERDS2TJ104	100 KΩ	1
R290	ERDS2TJ683	68 KΩ	1
R291	ERDS2TJ471	470Ω	1
R293	ERDS2TJ103	10 KΩ	1
R296	ERDS2TJ474	470 KΩ	1
R297	ERDS2TJ472	4.7 KΩ	1
R301	ERDS2TJ223	22 KΩ	1
R302	ERDS2TJ124	120 KΩ	1
R303	ERDS2TJ472	4.7 KΩ	1
R305 ⚠	ERQ14AJ2R0P	2Ω, 1/4W, Fuse Type	1
R306, 307 ⚠	ERD2FCJ4R7	4.7Ω, 1/4W, Fuse Type	2
R308	ERDS2TJ473	47 KΩ	1
R309	ERDS2TJ102	1 KΩ	1
R312	ERDS2TJ472	4.7 KΩ	1
R315	ERDS2TJ154	150 KΩ	1
R317	ERDS2TJ333	33 KΩ	1
R318	ERDS2TJ153	15 KΩ	1
R319	ERDS2TJ103	10 KΩ	1
R321	ERDS2TJ154	150 KΩ	1
R322 ⚠	ERD2FCG220	22Ω, 1/4W, Fuse Type	1
R323	ERDS2TJ154	150 KΩ	1
R324	ERDS2TJ153	15 KΩ	1
R325	ERDS2TJ333	33 KΩ	1
R326	ERDS2TJ154	150 KΩ	1
R327	ERDS2TJ103	10 KΩ	1
R328, 329	ERDS2TJ333	33 KΩ	2
R330 ⚠	ERD2FCG220	22Ω, 1/4W, Fuse Type	1
R331	ERDS2TJ154	150 KΩ	1
R333	ERDS2TJ103	10 KΩ	1
R334	ERDS2TJ154	150 KΩ	1
R339	ERDS2TJ331	330Ω	1
R340	ERDS2TJ123	12 KΩ	1
R344	ERDS2TJ333	33 KΩ	1
R353	ERDS2TJ474	470 KΩ	1
R355	ERDS2TJ473	47 KΩ	1
R358	ERDS2TJ472	4.7 KΩ	1
R365	ERDS2TJ472	4.7 KΩ	1

Ref. No.	Part No.	Description	Per/Set
R382	ERDS2TJ153	15 KΩ	1
R401	ERDS2TJ472	4.7 KΩ	1
R403	ERDS2TJ472	4.7 KΩ	1
R407, 408	ERDS2TJ472	4.7 KΩ	2
R410	ERDS2TJ681	680Ω	1
R411	ERDS2TJ333	33 KΩ	1
R412	ERDS2TJ103	10 KΩ	1

CAPACITORS

Ref. No.	Part No.	Description	Per/Set
C1	ECCR1H221J	220 pF	1
C2	ECKR1E473ZV	0.047 µF	1
C3	ECQG1H102KZ	0.001 µF	1
C4, 5	ECCR1H220J	22 pF, Except for [M][MC][EZ][XL] areas	2
C6, 7	ECKR1E473ZV	0.047 µF	2
C8	ECEA0JU101	100µF, 6.3 V	1
C9	ECEA0JU331	330µF, 6.3 V	1
C10~12	ECKR1E473ZV	0.047 µF	3
C15	ECEA1HU010	1 µF, 50 V	1
C16	ECQM1H153KV	0.015µF	1
C17	ECQV1H224JZ	0.22µF	1
C19	ECQM1H153KV	0.015µF	1
C20	ECRR1H104ZF	0.1 µF	1
C22	ECKR1E473ZV	0.047 µF	1
C23	AC2061G473Z5	0.047 F, 5.5 V, RAM Back up	1
C24	ECEA0JU101	100µF, 6.3 V	1
C26	ECRR1H104ZF	0.1 µF	1
C27, 28	ECCR1H220J	22 pF	2
C29~31	ECKR1E473ZV	0.047 µF	3
C32	ECCR1H221J	220 pF	1
C33	ECEA0JU331	330µF, 6.3 V	1
C34	ECEA0JU470	47µF, 6.3 V	1
C35	ECEA0JU331	330µF, 6.3 V	1
C36	ECQG1H472KZ	0.0047 µF	1
C37	ECQG1H102KZ	0.001 µF	1
C38	ECQG1H472KZ	0.0047 µF	1
C39	ECQG1H102KZ	0.001 µF	1
C40	ECQG1H472KZ	0.0047 µF	1
C41	ECQG1H102KZ	0.001 µF	1
C42	ECQG1H472KZ	0.0047 µF	1
C43	ECQG1H102KZ	0.001 µF	1
C44	ECQG1H472KZ	0.0047 µF	1
C45	ECQG1H102KZ	0.001 µF	1
C46	ECQG1H472KZ	0.0047 µF	1
C47	ECQG1H102KZ	0.001 µF	1
C48	ECQG1H472KZ	0.0047 µF	1
C49	ECQG1H102KZ	0.001 µF	1
C50	ECQG1H472KZ	0.0047 µF	1
C51	ECQG1H102KZ	0.001 µF	1
C52	ECCR1H151J	150 pF	1
C53	ECCR1H221J	220 pF	1
C54	ECCR1H331J	330 pF	1
C55	ECCR1H680J	68 pF	1
C56	ECQG1H472KZ	0.0047 µF	1
C57	ECQG1H102KZ	0.001 µF	1
C58	ECQG1H472KZ	0.0047 µF	1
C59	ECQG1H102KZ	0.001 µF	1
C60	ECQG1H472KZ	0.0047 µF	1
C61	ECQG1H102KZ	0.001 µF	1
C62	ECQG1H472KZ	0.0047 µF	1
C63	ECQG1H102KZ	0.001 µF	1
C64	ECQG1H472KZ	0.0047 µF	1
C65	ECQG1H102KZ	0.001 µF	1
C66	ECQG1H472KZ	0.0047 µF	1
C67	ECQG1H102KZ	0.001 µF	1
C68	ECQG1H472KZ	0.0047 µF	1
C69	ECQG1H102KZ	0.001 µF	1
C70	ECQG1H472KZ	0.0047µF	1
C71	ECQG1H102KZ	0.001 µF	1
C72, 73	ECCR1H331J	330 pF	2
C74, 75	ECKR1E473ZV	0.047µF	2
C76	ECCR1H221J	220 pF	1
C77	ECEA0JU331	330µF, 6.3 V	1
C79	ECEA0JU331	330µF, 6.3 V	1
C82	ECEA1HU010	1µF, 50 V	1
C86	ECKR1E473ZV	0.047 µF	1
C87	ECEA1HU010	1 µF, 50 V	1
C88	ECKR1E473ZV	0.047 µF	1
C89	ECEA1HU010	1 µF, 50 V	1
C90	ECKR1E473ZV	0.047µF	1
C93	ECEA1HU010	1 µF, 50 V	1
C94	ECQG1H222KZ	0.0022µF	1
C95	ECCR1H221J	220 pF	1
C96	ECCR1H151J	150 pF	1
C97	ECCR1H101J	100 pF	1
C98	ECCR1H471J	470 pF	1
C99	ECQG1H222KZ	0.0022µF	1
C100, 101	ECCR1H471J	470 pF	2
C102	ECCR1H101J	100 pF	1
C107, 108	ECCR1H471J	470 pF	2
C109	ECQG1H222KZ	0.0022µF	1
C110	ECCR1H101J	100 pF	1
C112	ECCR1H681J	680 pF	1
C113	ECCR1H471J	470 pF	1
C114	ECCR1H151J	150 pF	1
C115	ECEA1HU010	1 µF, 50 V	1
C120, 121	ECQV1H334JZ	0.33µF	2
C122	ECEA1HU010	1 µF, 50 V	1
C123, 124	ECCR1H151J	150 pF	2
C125	ECEA1EU100	10µF, 25 V	1
C126, 127	ECCR1H151J	150 pF	2
C128, 129	ECEA1EU100	10µF, 25 V	2
C130, 131	ECCR1H151J	150 pF	2
C132	ECQM1H103KV	0.01 µF	1
C133	ECQV1H104JZ	0.1 µF	1
C136	ECCR1H220J	22 pF	1
C137	ECQV1H224JZ	0.22µF	1
C144, 145	ECEA1HU010	1 µF, 50 V	2
C150	ECCR1H220J	22 pF	1
C153	ECKR1E473ZV	0.047 µF	1
C154	ECCR1H101J	100 pF	1
C158	ECEA1HU010	1 µF, 50 V	1
C159	ECEA1HN010S	1 µF, 50 V	1
C160	ECCR1H470J	47 pF	1
C161	ECEA1HN010S	1 µF, 50 V	1
C162	ECEA0JU331	330µF, 6.3 V	1
C163, 164	ECEA1CU101	100µF, 16 V	2
C166, 167	ECEA1CU470	47µF, 16 V	2
C171	ECKR1E473ZV	0.047 µF, [M][MC][EZ][XL] areas only	1
C173	ECEA1CU470	47µF, 16 V	1
C174	ECCR1H681J	680 pF	1
C175	ECCR1H331J	330 pF } [M][MC][EZ][XL] areas only	1
C176	ECKR1E473ZV	0.047µF	1
C177	ECCR1H331J	330 pF	1
C178	ECEA1CU470	47µF, 16 V	1
C179	ECCR1H681J	680 pF	1
C180	ECCR1H471J	470 pF	1
C181	ECQG1H222KZ	0.0022µF	1
C182	ECCR1H101J	100 pF	1
C183	ECQV1H104JZ	0.1µF	1
C184	ECEA1CU470	47µF, 16 V	1
C185	ECCR1H681J	680 pF	1
C190	ECQV1H474JZ	0.47µF	1
C194	ECQV1H473JZ	0.047µF	1

Ref. No.	Part No.	Description	Per/Set
C198	ECQG1H682KZ	0.0068µF	1
C200, 201	ECKR1E473ZV	0.047µF	2
C202	ECEA0JU331	330µF, 6.3V	1
C203	ECKR1E473ZV	0.047µF	1
C204	ECQM1H223KV	0.022µF	1
C205, 206	ECKR1E473ZV	0.047µF	2
C208	ECKR1E473ZV	0.047µF	1
C209	ECKR1E473ZV	0.047µF, [M][MC][EZ][XL] areas only	1
C210	ECKR1E473ZV	0.047µF	1
C213, 214	ECKR1E473ZV	0.047µF	2
C216	ECQG1H472KZ	0.0047µF	1
C217	ECQG1H222KZ	0.0022µF	1
C300	ECQG1H332KZ	0.0033µF	1
C312, 313	ECKR1E473ZV	0.047µF	2
C320	ECRR1H104ZF	0.1µF	1

CPSL SIDE CONTROL PANEL CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	MN15524PGY	1 chip 4 bit Microcomputer	1
IC2~4	SVIGM74LS07	Hex Buffers (O.C.)	3
TRANSISTORS			
Q1~4	2SA830B		4
Q6	2SC1047C		1
DIODES			
D3, 7~17, 19~24, 28, 30, 31, 33~37, 39, 42, 44, 45, 52~55, 58~67, 70~73, 75~87, 175	MA165TA5	DIODE	62
D90~99, 102~107, 110, 112, 113, 115~119, 121, 124, 126, 127, 134~137, 140~148, 151~154, 156~166, 168	SVDGSEL4117R	LED (Red)	57
D100, 167	SVDGSEL4417G	LED (Green)	2
OSCILLATOR			
X1	EF0FC4004A3	4MHz, Ceramic Oscillator	1

Ref. No.	Part No.	Description	Per/Set
SWITCHES			
S1	SSSG1011A	Transpose	1
S7~17, 19~24, 28, 30, 31, 33~37, 39, 42, 44, 45, 52~55, 58~66, 70~73, 75~87	SSHG1045A	Push switch	59
VARIABLE RESISTOR			
VR1	EVD06510B24G	20KΩ B, TEMPO CONTROL	1
RESISTORS			
R2~6	ERDS2TJ103	10KΩ	5
R7~10	ERDS2TJ152	1.5KΩ	4
R15~32	ERDS2TJ470	47Ω	18
R34	ERDS2TJ472	4.7KΩ	1
R35	ERDS2TJ222	2.2KΩ	1
R36~39	ERDS2TJ152	1.5KΩ	4
R42~59	ERDS2TJ152	1.5KΩ	18
CAPACITORS			
C1	ECEA0JK470	47µF, 6.3V	1
C2	ECRR1H104ZF	0.1µF	1
C3	ECBA1H471KB	470pF	1

CPL CONTROL PANEL LEFT CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1, 2	SVIGM74LS174	Hex D-type Flip-Flops	2
IC3	SVIGM74LS138	Decoder	1
IC4	SVIGUPD7225	LCD Driver	1
TRANSISTORS			
S Q1	2SA1015-GR	2SA933STRS (SUB. Part)	1
S Q2, 3	2SC2320LFG	2SC1310FG (SUB. Part)	2
DIODES			
D1~12	MA165TA5	Diode	12
D13~24	SVDGSEL4117R	LED (Red)	12
LCD DISPLAY			
LCD1	SXEG52A	LCD Display	1
SWITCHES			
S1~12	SSHG1045A	Push switch	12

REPLACEMENT PARTS LIST......Cabinet and Chassis Parts

Notes:

1. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. ○ mark are new parts.
3. For part No. with area mark, check the area when placing an order.

■ CABINET & CHASSIS PARTS

	Ref. No.	Part No.	Description	Per/Set
			SWITCH	
	S1 ⚠	SSHG1050A	Power Switch	1
			TRANSFORMER	
○	T1 ⚠	SLTG5M48	Power Transformer	1
○	T1 M MC ⚠	SLTG5M49	Power Transformer	1
			AC POWER CORD & PLUG	
	PC1 EK XS XD ⚠	SJAG39	AC Cord	1
	PC1 XL XR ⚠	SJAG61	AC Cord	1
	PC1 M MC ⚠	SJAG62	AC Cord	1
	PC1 ⚠	SJAG41	AC Cord, other areas	1
	PC2 X ⚠	SJP5213-1	Attachment Plug [X] area	1
	PC3 XD ⚠	SJPG1350A	Attachment Plug [XD] area	1
			SPEAKER	
	SP2, 3	EAS65PH31A	6.5cm, 8Ω	2
			CABINET	
	1 [EX15L]	SKGG1B130A	Music Rack	1
○	2 [EX15L]	SHGG6261A	Rubber	1
○	3 [EX15L]	SYWGA1061B	Upper Control Panel	1
○	3 [EX15]	SYWGA1061A1	Upper Control Panel	1
○	4	SGUG91A	Display Cover Panel	1
○	5	SGWG8231B	Lower Control Panel, Left	1
○	6	SGWG8221B	Lower Control Panel, Right	1
○	7	SHSG3940A	Felt	1
○	8	SHSG3950A	Felt	1
○	9	SGXG3210A	Ornament, Keyboard	1
○	10 [EX15]	SKZG8520A	Keyboard Cover Ass'y	1
	10-1 [EX15]	⎡ SBHG190A	Hinge	3
	10-2 [EX15]	⎢ SBHG200A	Hinge	3
	10-3 [EX15]	⎣ SKHG80A	Grip	2
	11 [EX15]	SBHG210A	Hinge	2
○	12 [EX15]	SKZG7831A	Rear Board (Upper)	1
○	12 [EX15L]	SKZG7830A	Rear Board (Upper)	1
	13 XL XR	SJS9334A	AC Inlet Cover	1
	13	SJS9231A	AC Inlet Cover, other areas	1
○	14	SMKG3470A	Jack Panel	1
○	15 EN EZ M MC	SMKG3480A	AC Panel	1
○	15	SMKG3481A	AC Panel, other areas	1
○	16	SMKG3490A	Headphones Jack Panel	1
	17	SHSG2870A	Felt	1
○	18	SGXG3200A	Ornament, Front	1
	19	SGBG160A	Technics Badge	1
	20	SGKG980A	Headphone label	1

	Ref. No.	Part No.	Description	Per/Set
			KNOBS, BUTTONS	
	21 ⚠	SBCG110B	Button (Power Switch)	1
	22	SBNG7050A	KNOB (TEMPO, TRANSPOSE)	2
○	23	SBCG1330A	Button (UPPER SOLO)	1
○	24	SBCG1341A	Button (UPPER POLY)	1
○	25	SBCG1351A	Button (CELESTE, TAB TREMOLO)	1
○	26	SBCG1361A	Button (BASS)	1
○	27	SBCG1371A	Button (SUSTAIN)	1
○	28	SBCG1381A	Button (LOWER POLY)	1
○	29	SBCG1391A	Button (VSC, ORCHESTRAL CONDUCTOR)	1
○	30	SBCG1400A	Button (RHYTHM)	1
○	31	SBCG1410A	Button (MAIN VOL)	1
○	32	SBCG1421A	Button (FILL IN & INTRO, ENDING)	1
○	33	SBCG1431A	Button (PLAY MODE)	1
○	34	SBCG1440A	Button (UPPER TAB VOICES)	1
○	35	SBCG1450A	Button (LOWER TAB VOICES)	1
			MANUAL KEYBOARD	
	36	STBG1150A	White Key (Top Octave C Key)	2
	37	STBG1120A	White Key (B & E Key)	14
	38	STBG1110A	White Key (D Key)	6
	39	STBG1100A	White Key (C & F Key)	14
	40	STBG1140A	White Key (A Key)	8
	41	STBG1130A	White Key (G Key)	8
	42	STBG2070A	Black Key	36
	43	SUSG270A	Spring	88
	44	SHSG1931A	Felt	4
	45	SHGG9050A	Key Guide Rubber	88
	46	SSPG7001A	Rubber Switch (7pcs. on one)	4
	47	SSPG6001A	Rubber Switch (6pcs. on one)	10
			SCREWS & WASHERS	
	N1	XTB4+12A	Screw	39
	N2	XTW3+10Q	Screw	26
	N3	XYN4+F10	Screw with Washer	1
	N4	SNEG740A	Screw	2
	N5	XTB3+5C	Screw	14
	N6	XTT4+10A	Screw	3
	N7	XYN5+C10	Screw with Washer	2
	N8	XYN3+F6FZ	Screw with Washer	4
○	N9	XTB3+5FFZ	Screw	24
○	N10	XTB3+8GFZ	Screw	4
○	N11	XTW3+10JFZ	Screw	8
	N12	XYN4+F10FZ	Screw with Washer	7
	N13	XTT4+16AFZ	Screw	6
	N14	XTB35+12A	Screw	10
	N15	SNEG1241A	Screw	4

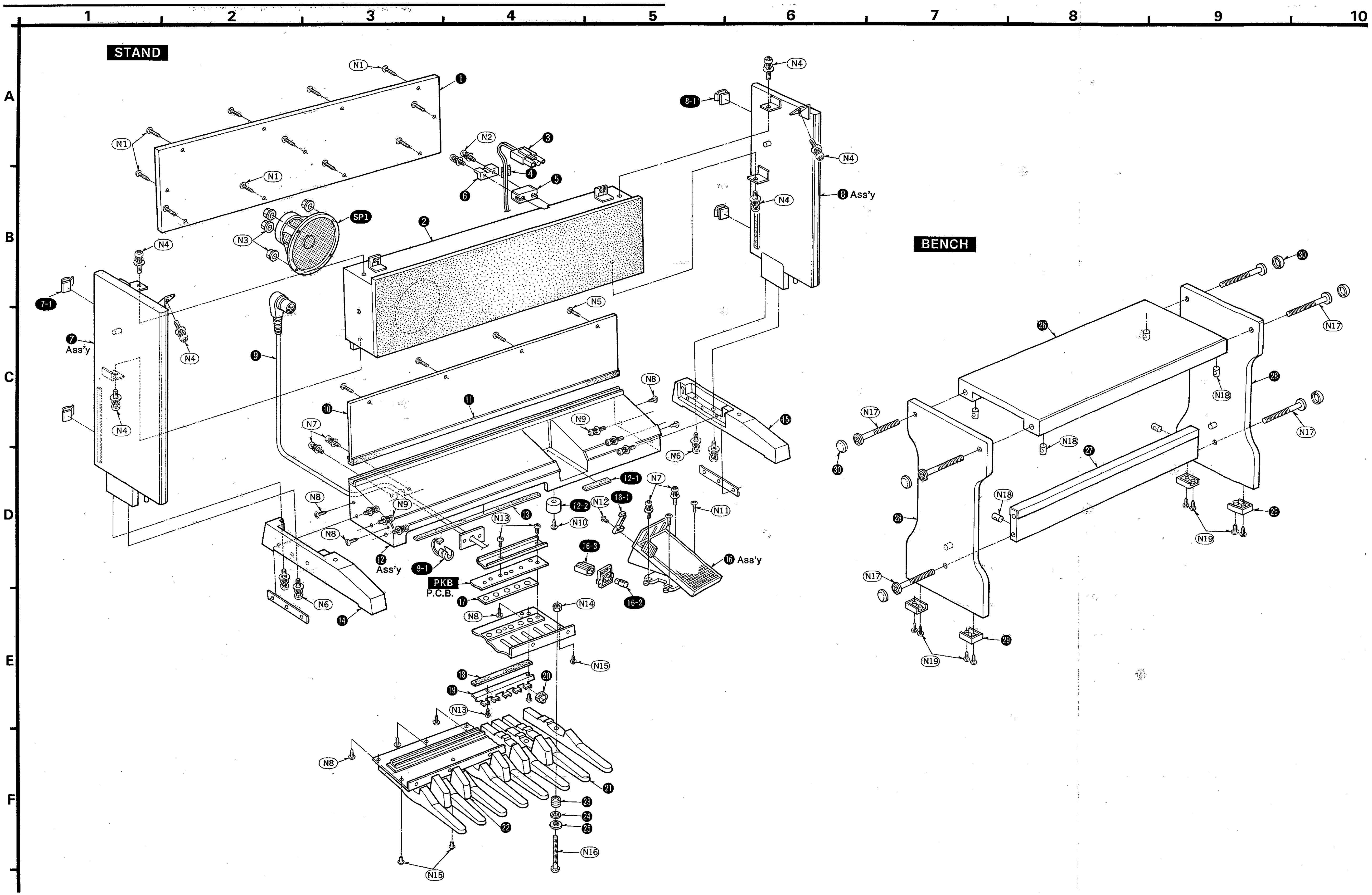
	Ref. No.	Part No.	Description	Per/Set
	N16	XTW3+8JFZ	Screw	3
	N17	XTB35+8A	Screw	4
	N18	XTT4+30A	Screw	2
	N19	XTB35+10A	Screw	8
	N20	XYN4+F12	Screw with Washer	4
○	N21	SNEG2560A	Screw with Washer	4
	N22	SNEG770A	Washer	1
	N23	XNS12FZ	Nut	1
	N24	SNEG150A	Washer	9
	N25	XWA5B	Washer	2
	N26	XSN5+85FVC	Screw	2
	N27	XYN5+C25FVC	Screw with Washer	7
	N28	XTB35+20A	Screw	4
○	N29	XTB3+8BFVC	Screw	2
	N30	XTT35+10AFVC	Screw	5
	N31	XTW3+10T	Screw	24

STAND & BENCH

	Ref. No.		Part No.	Description	Per/Set
			SPEAKER		
	SP1		EAS20PL255A	20cm, 4Ω	1
			STAND		
○	1		SKFG1291A	Rear Board	1
○	2		SKZG9420B	Speaker Box	1
○	3		SWKG03124ZA	Wire with Connector	1
○	4		SHRGA7390	Sponge	1
	5		SHRG1110A	Cord Clamper	1
	6		SHRG1120A	Cord Clamper	1
○	7		SKSG2790A	Left Plank Ass'y	1
	7-1		SHRG9620A	Cord Clamper	2
○	8		SKSG2800A	Right Plank Ass'y	1
	8-1		SHRG9620A	Cord Clamper	2
○	9		SWKG0715ZB	Wire with Connector	1
	9-1		SHRG1160A	Cord Clamper	1
○	10		SKFG2530A	Rear Board	1
○	11		SHSG6140A	Felt	1
○	12		SKZGE300A	Pedal Box Ass'y	1
	12-1		SHSG3170A	Felt	1
	12-2		SKLA7-2	Foot	1
	13		SHSG6030A	Felt	1
○	14		SKLG280A	Leg, Except for [M] area	1
○	14	M	SKLG281A	Leg, [M] area only	1
○	15		SKLG290A	Leg, Except for [M] area	1
○	15	M	SKLG291A	Leg, [M] area only	1
	16		SXVG5110A	Expression Pedal Ass'y	1
	16-1		SSHG14	Foot Switch	1
	16-2		XAMR55P	Lamp	1
	16-3		RJS205ZA	Socket	1
	17		SHGG50A	Rubber Switch (5pcs. on one)	3
	18		SHSG1600B	Felt	1
	19		STBG4011A	Key Guide	1
	20		SHSG1460A	Felt (Key Guide)	13
	21		STBG1091C	White Key	8
	22		STBG2052A	Black Key	5
	23		SUSG180A	Spring	13
	24		SHGG8130A	Rubber	13
	25		SHRG9240A	Spacer	13

	Ref. No.	Part No.	Description	Per/Set
			BENCH	
	26	SKPG920A	Top Cover	1
	27	SKZG7680A	Crossboard	1
	28	SKSG1860A	Plank	2
	29	SHRG2060C	Foot	4
	30	SNEG1760B	Cap	6
			SCREWS & WASHERS	
○	N1	XTT35+30AFZ	Screw	11
	N2	XYN3+F30	Screw with Washer	2
	N3	SNE499-1	Nut	4
○	N4	SNEG2560A	Screw with Washer	6
	N5	XST4+20FZ	Screw	4
	N6	XYN5+F16	Screw with Washer	4
	N7	XYN4+F20FZ	Screw with Washer	4
	N8	XTT4+16A	Screw	8
	N9	XYN4+F30	Screw with Washer	6
	N10	XTB35+16A	Screw	1
	N11	XTT4+16AFZ	Screw	2
	N12	XTN26+6B	Screw	1
	N13	XTB3+6B	Screw	11
	N14	XNG5BS	Nut	13
	N15	XTW3+8J	Screw	3
	N16	SNEG360A	Bolt	13
	N17	SNEG1720B	Bolt	6
	N18	SNEG1710A	Nut	6
	N19	XTB3+25A	Screw	8

EXPLODED VIEWS OF STAND AND BENCH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STAND
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SP1
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8-1
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N4
8 Ass'y
N4
7-1
7 Ass'y
N4
N4
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12-1
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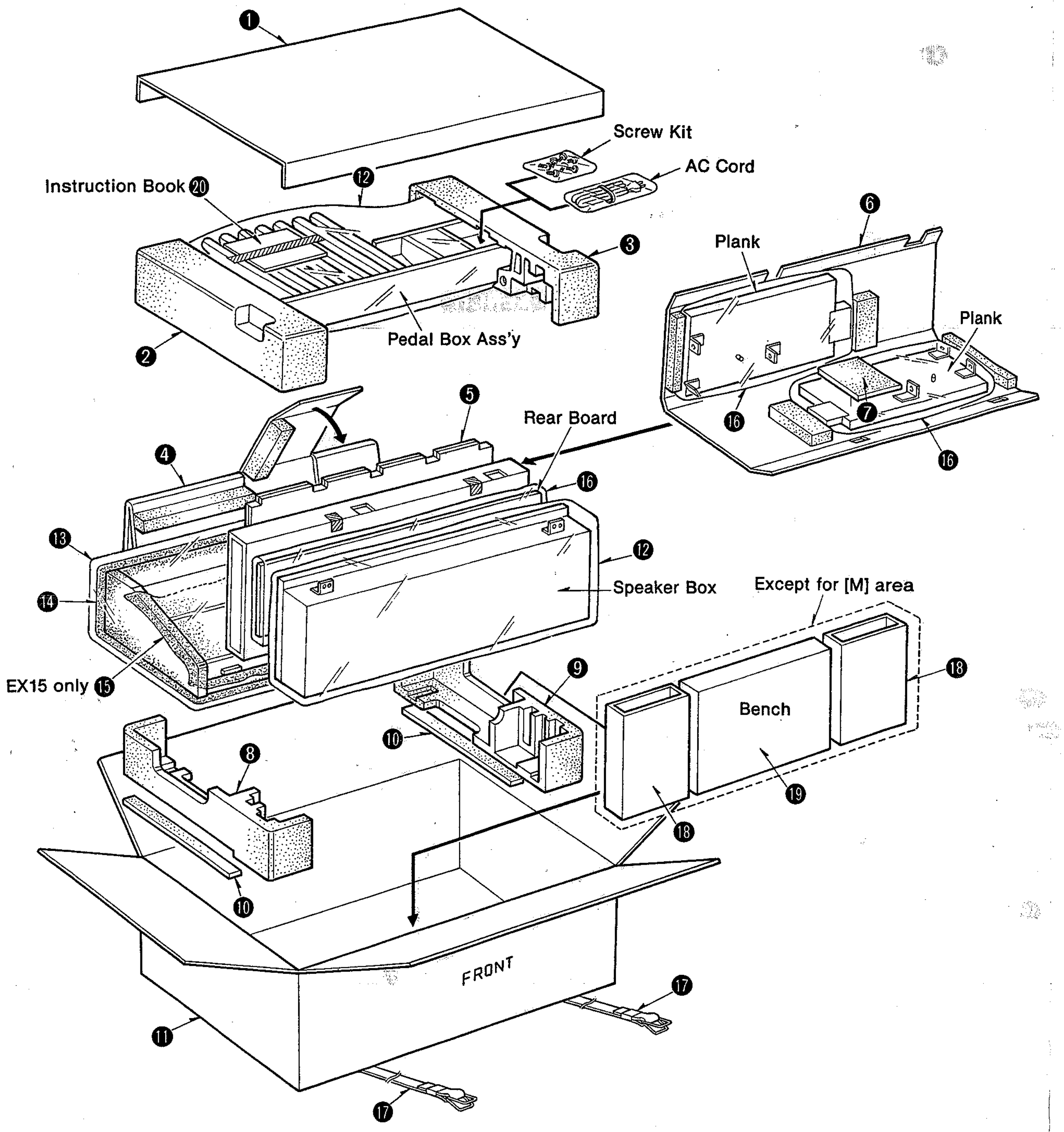
PACKING


1
Screw Kit
AC Cord
Instruction Book 20
12
3
6
Plank
Plank
2
Pedal Box Ass'y
5
Rear Board
4
16
16
7
16
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14
Speaker Box
Except for [M] area
EX15 only 15
9
18
10
Bench
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FRONT
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17

PACKING PARTS (Except for [M] area)

Ref. No.			Part No.	Description	Per/Set
○	1		SPNG2068	Pad	1
○	2		SPNG5809B	Cushion Pad	1
○	3		SPNG5810B	Cushion Pad	1
○	4		SPNG2071A	Pad	1
○	5		SPNG2072A	Music Rack Case	1
○	6		SPNG2070A	Planks Case	1
○	7		SPNG5806A	Cushion Pad	1
○	8		SPNG5807A	Cushion Pad	1
○	9		SPNG5808A	Cushion Pad	1
○	10		SPNG3120A	Pad	2
○	11	[EX15]	SPNG2065	Packing Case, EX15 only	1
○	11	[EX15L]	SPNG2061A	Packing Case, EX15L only	1
	12		SPHG1630A	Polyethylene Bag	2
	13		SPHG1110A	Polyethylene Bag	1
	14		SPHG280A	Protection Sheet	1
○	15	[EX15]	SPHG2260A	Protection Sheet, EX15 only	1
	16		SPHG1641A	Polyethylene Bag	3
	17		SPSG40A	Band	2
○	18		SPNG2073A	Pad	2
	19		SPNG1784A	Packing Case, Bench	1
INSTRUCTION BOOK					
○	20	EN	SQFGA1400	Instruction Book, [EN] only	1
○	20		SQFGA1430	Instruction Book	1

PACKING PARTS (Products for [M] area)

Ref. No.		Part No.	Description	Per/Set
○	1	SPNG2069	Pad	1
○	2	SPNG5809B	Cushion Pad	1
○	3	SPNG5810B	Cushion Pad	1
○	4	SPNG2071A	Pad	1
○	5	SPNG2072A	Music Rack Case	1
○	6	SPNG2070A	Planks Case	1
○	7	SPNG5806A	Cushion Pad	1
○	8	SPNG5807A	Cushion Pad	1
○	9	SPNG5808A	Cushion Pad	1
○	10	SPNG5845A	Pad	2
○	11	SPNG2063A	Packing Case	1
	12	SPHG1630A	Polyethylene Bag	2
	13	SPHG1110A	Polyethylene Bag	1
	14	SPHG280A	Protection Sheet	1
	16	SPHG1641A	Polyethylene Bag	3
	17	SPSG40A	Band	2
INSTRUCTION BOOK				
○	20	SQFGA1421	Instruction Book	1